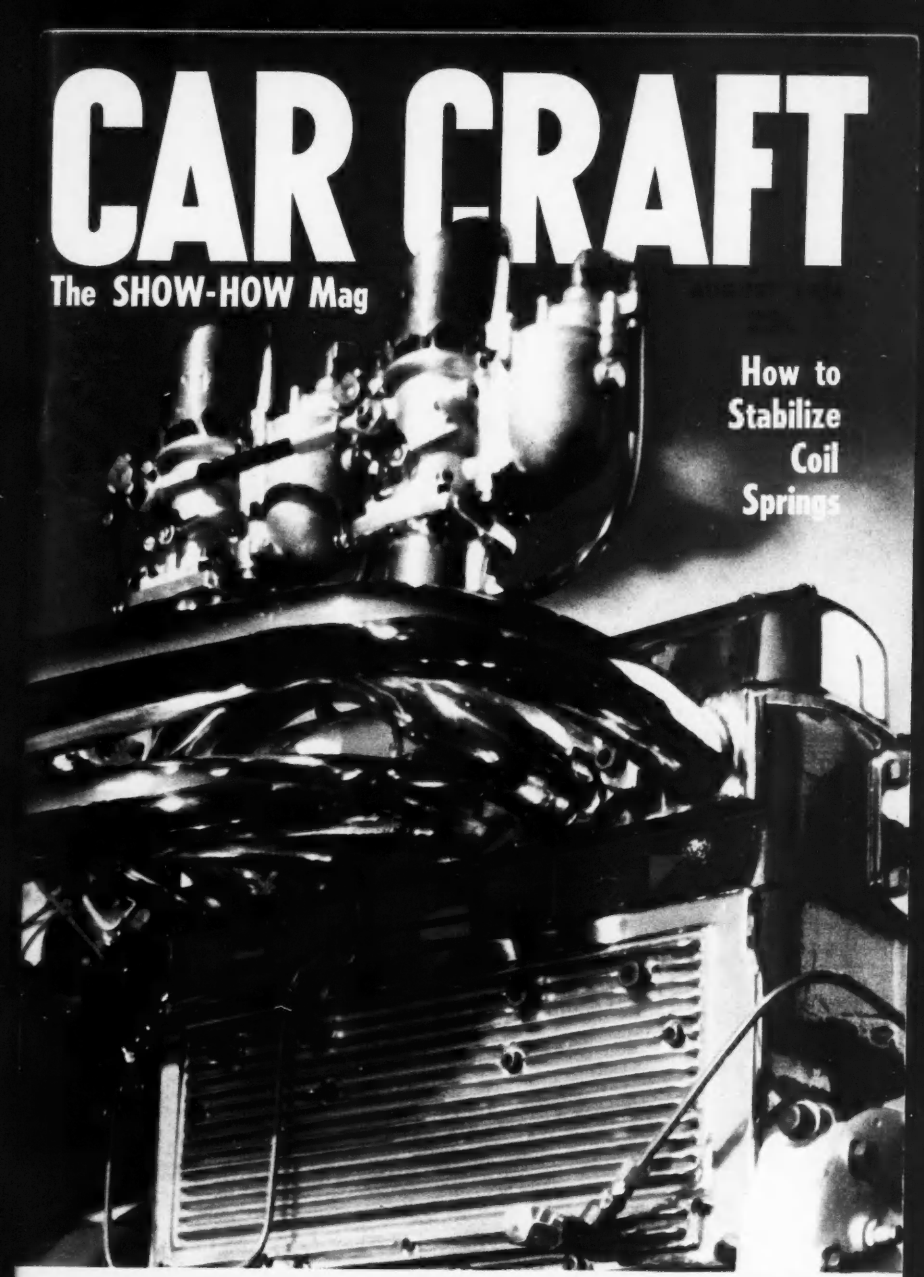
CAR CRAFT

The SHOW-HOW Mag



How to Stabilize Coil Springs

COMPETITION TIRE TIPS page 10

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CAR CRAFT

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COVER

That sparkling red and chrome four-barrel on this month's cover is a rare sight these days. The mill is a Cragar, put together by Stan Weisbard, one of the last of the four-barrel holdouts in this age of inches. The rest of the car is as spotless as the engine. Story starts on page 32. *Ektachrome by Bob D'Olivo*

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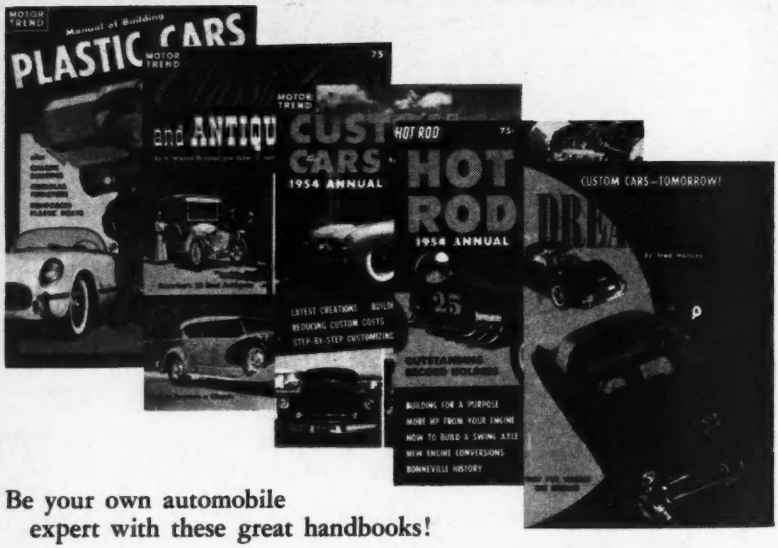
How's Your Automotive I.Q.?



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BRIEF AND TO THE POINT:

294 Words From the Editor

A GLANCE at the contents page will show that Racer Brown is not with us this month. He thought that he might have the second part of his Nitro series but since the guy is a perfectionist of sorts, he felt that his new research was not complete enough by deadline time. Next month he should be back, however.

Speaking of Racer, during his research he was in the midst of setting up his new '54 Ford. Figuring that the '54 Merc heads would save him considerable time and porting tools, he purchased a set. After considerable grinding and polishing, he came up with a very choice set of heads indeed. Bolting them on the Ford block presented no trouble at all—at first.

With everything cinched down tight, water was poured into the radiator. And poured and poured and poured. The reason why was soon apparent when the dipstick pipe and the breather pipe began to make like drinking fountains. Seems the water passages in the head match up with the wrong holes in the block, a fact not at all apparent on inspection. The lesson is clear—*use the Ford heads or start with a Merc block in the first place.* However, if you're this far, you can use Merc gaskets and get away with it.

What we *do* have this month, though, is a full book. F'rinstance, check pages 16 to 19 if you're interested in building your own speed equipment. Ed Monroe has come up with a dilly. And if you like small-bore bombs, take a look at pages 44 through 49. This is a 91-incher that's a real sizzler. If you happen to own a Singer, read it carefully—you might have a scorcher on your hands.

THINGS TO COME

WHITEY Thuesen is one of the best machinists connected with the racing business. Sound like a blunt statement? It's a fact. So, when we heard that Whitey and Bob Montgomery were stuffing a road racing machine together, we got more than a little excited. The car is something that only Whitey would come up with—a real jewel. For power, he used two Crosley blocks mounted in Vee on a single aluminum crankcase to make a 91 cubic inch V8. The rest of the car is just as ingenious. Next month, we'll give you all the details we've been able to get hold of.

Also coming up, as we mentioned above, is another Nitro story by Racer Brown. Chuck Eddy, who has been sitting in his cave dreaming up new ways to get power out of different things, will be back with us shortly with a number of goodies like how to stuff a Ford in a Jag (any vintage), how to make those neat valves shown in the four-barrel story and perhaps something on Plymouth and Chevrolet engines.

Who knows, maybe we can pry another igniter feature out of Dean Moon. Anyway, the next few issues will be loaded to the hat as usual. See you next month.

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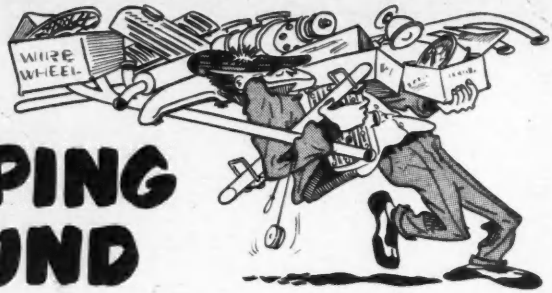
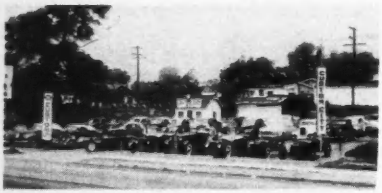


SHOPPING AROUND

CUSTOM CITY

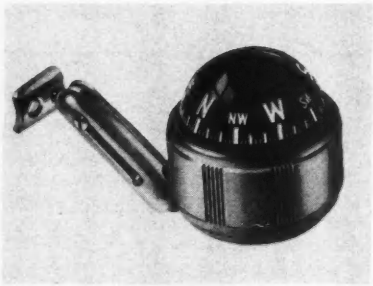
WHILE most used car lots will turn thumbs down on any form of hot rod or custom car, there are one or two which will take almost nothing but. Such a lot is Custom City, owned by a couple of hot rod enthusiasts named Marvin Gilberg and Park Dana. Their emporium at 8221 Santa Monica Boulevard, Los Angeles, is a treasure trove



for those who want to buy either the makings of a hot rod or custom or to buy the finished product. Marv and Dana, unlike most other custom lot owners, will take in and sell unfinished cars or partially modified customs, making the lot a mecca for those who want to do their own work but haven't the facilities for starting from scratch. Who knows? They might even do business by mail. If you're in the market for a clean roadster or coupe or the makings of either, drop the boys a line.

AUTO COMPASS

HERE'S a new compass that looks as if it would do the job of pointing out directions with a minimum of problems. Made by Airguide, the compass will mount anywhere on the windshield strip and is set up so that it won't block the driver's vision. Instead of having a steel magnet, the unit is equipped with an Alnico V magnet, said to have about 10 times the coercive force of the ordinary magnet. The manufacturer says that the unit is easily compensated for the car's electrical and metallic disturbances. The non-illuminated



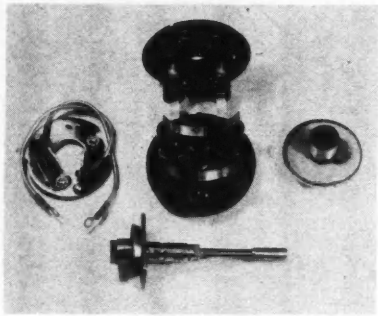
model sells for $5.95 and the rim-illuminated model for a buck more. Write to Airguide Instrument Co., 2210 Wabansia Avenue, Chicago 47, Illinois.

IGNITION KIT

FOR those who got in late on our Hot Ignition story (*CCM—April, May and June, 1954*) here's the complete kit, ready to install. All the machine work and soldering has been done as well as the point installation. All you have to do is follow the assembly instructions in the stories and stuff the thing together. Price of the complete kit is $19.50, exchange, with no outright sales made; you must have an exchange of stock parts (except for points) with your order.

The parts are also sold separately at prices as follows:

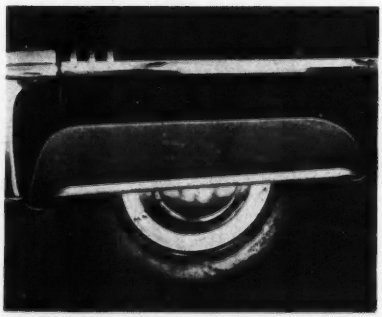
Caps or terminal plates	$7.00 exch.
Plate and magneto points	$8.00 exch.
Distributor shaft	$1.50 exch.
Distributor cam and weights	$4.50 exch.
Points only	$3.50



All prices include tax and postage; there are *no* further charges! Write Dean Moon, Box 432, Santa Fe Springs, Calif.

CUSTOM SKIRT

A NEW Erie flared bottom custom fender skirt, Stock No. FS68, styled for the '53 and '54 Plymouth is now available in stores selling automotive accessories. A unique dual locking device and factory installed invisible rubber moulding assure snug, rattle-proof fit. A heavy steel arm securely locks the skirt to the fender in four places, two at the top and one on each side. The skirt installs or removes instantly. Construction is heavy gauge steel with rustproof prime finish. Manufacturer is Erie Manufacturing Division Pressed Steel Car Company, Inc. Retail price is $9.95 per pair. Distributor is H & M Auto Parts, 2115 S. Michigan Ave., Chicago, Ill.



500 CC

THOSE with the yen to get out and fly with the "500" crew can get parts or a whole car from an outfit in San Anselmo, California. If you want to build your own Formula III car you can get brakes, cast magnesium wheels, suspension goodies and JAP or Norton engines from this company. Or if you want to be in business completely they'll sell you a Cooper ready to roll. They also handle English made crash helmets at $16 a copy, a good buy at any time. Their motto is "Don't *buy* your way to fame, *drive* your way to fame." For information write Cooper Racing Cars of England, 610 Sir Francis Drake Blvd., San Anselmo, California.

MOTORAMA '54

THE "Show How" section of the 5th International Motorama, to be held in Los Angeles in November, will be far larger than in previous years.

In announcing that this huge mechanized equipment exposition will be held in the Pan Pacific Auditorium November 5-14, the management of the show asserted that much more emphasis will be placed on the how-to-do-it aspects of car building than in previous years.

There also will be greater emphasis in 1954 on hand-crafted cars, such as hot rods and dragsters, than during the past two shows.

The speed shop and equipment division of the exposition is being considerably enlarged and the motorcycle division is likewise being increased in scope.

The editorial staff of CAR CRAFT will assist the management of the International Motorama in the selection of vehicles to be used as feature house displays.

For information concerning the purchase of commercial booth space or details on offering vehicles for house exhibits, please communicate with Motorama Inc., 5959 Hollywood Blvd., Hollywood 28, California.

(*Continued on page 62*)

LETTERS

STYLE NOTE

Dear Sirs:

In your April issue, "Letters" column; Don Remard was inquiring about '40 grille conversions. Maybe this letter will help him some.

Several years ago I came into possession of a '40 that had the grille smashed in. The guys in my town were ribbing me about it, so one day after many of these insults, I hauled out the '40 LaSalle grille that was laying around in my backyard. I tried it in the grille slot and the effect was most humorous. What a challenge! It made the hood line look as if it were 8 feet in the air. We took out all of the grille components and welded the side grille plates shut, then leaded them over. We took a piece of stock aluminum sheet .032 and shaped it to fit in the center slot. After this we took the LaSalle grille and took out a 4 inch section from the center and welded it shut. Next we made a cardboard template of the grille and marked it out on the center piece; this was cut out and the grille fitted in place. The effect was very pleasing.

However, after running the car we found that the grille restricted the air flow to an extent that it made the car heat up. We then added an air scoop under the center piece but back far enough to be hidden from view. This directed a large amount of air into the radiator and was very satisfactory.

Yours truly,
Tom Ambrose
Arlington, Calif.

Thanks, Tom.—Ed.

STYMIED

Dear Sirs:

Enclosed you will find my three dollars for a one year subscription to CAR CRAFT magazine. I think your magazine is fabulous and it should be kept just the way it is. I sure enjoy your articles on rods and customs and how-to-do-it, also "Torch Tips" which is great. I'm a custom enthusiast, but at the present time, I'm overseas on a ship and can't do much about it.

The article on the "Tradition Breaker" was really great; just goes to show that customs are leading the field in automotive trend and design.

There are several buddies here aboard ship, all of whom say your magazine is swell. So from us to you, keep it up, we love it.

Lewis C. Burger (B.G.)
USS Mountrail
c/o F.P.O. San Francisco, Calif.

We sort of like your outfit, too.—Ed.

THE BUYER IS HAPPY

Dear Sirs:

Knowing that you are interested in what the customer thinks of your magazine I am submitting the following:

I picked up your first issue because of the cover and the title HONK!, but I glanced through it before I bought. I now just look for the CAR CRAFT each month and buy, because I know what is inside. I guess this is the reason that I thought that it was rather pointless to argue about the name. There are many readers, like myself, who look before they buy, and they have been looking at car

magazines for some time. I do think that your magazine is the best and that you have worked from a good beginning to a very outstanding magazine.

Some of the things that I like the most in your magazine are: The way you explain, "What, Why and How." It seems that no other magazine says all three, "*What* to do for certain results, *why* you are doing them and *how* to do them." I also like the approach that you have to power in all kinds of motors and all sizes. I am looking forward to seeing what you have to say about Ford Industrial Fours.

Sincerely,
Thomas F. Brown
Korea

Thank you, Tom. Hope you got your June issue with the Ford Four story—Chuck Eddy outdid himself. Even Ford is happy.—Ed.

ADD SPEED SHIFT

Dear Sirs:

I am a new reader of CAR CRAFT, and think it is a good "mag" to have around. I like the how-to-do-it articles very much.

While reading through the May '54 issue in the "Letters" section, there was one special that caught my eye—the one entitled "Omatic speed shift." It wasn't the letter as much as the answer to it.

It stated, "Since 45 mph in low range would indicate about 5000 rpm, an impossibility with a stock engine." Well, now you have me somewhat confused. I have ridden in a car, a '53 Fordomatic 4-door sedan to 50 mph in low range and watched the speedo needle march right out of sight before being dropped into Hi-range or gear whatever it is. Now you probably think I'm pulling your leg, but believe me. True, it isn't what you would call strictly "stock," though.

This is how it was set up. First of all the "Fordo" was reworked so that it would lock in all gears; low, intermediate and high. When that was done, exhaust headers were installed with straight through mufflers, a 4 throat Lincoln carb, 8½ to 1 compression heads, mallory dual point distributor with centrifugal weight spark advance. All else is strictly stock. The bore, stroke, pistons, valves, and camshaft. Now, I'm not an expert, far from it, and I don't know how high an engine with this set-up will wind out or how much in error the speedo is and as I don't drink and was not sleepy at the time, I am very sure as I watched the speedo needle go out of sight before being dropped into high gear of what I saw.

What I really want to know is how high can a "stocker" with this set-up really wind up to and if a ¾ grind cam would help—which is what this fellow is thinking of putting in next. Can an engine of this set-up over peak? Approximately how fast were we really going as to true speed taking in consideration "speedo" error? How much rpm was the engine winding?

To many readers, this letter may leave room for doubt, but as for me, I saw it with my own eyes, so I believe it.

Yours truly,
Omer J. Viens
Danielson, Conn.

As you noticed, we said that 5000 rpm with a stock engine is very close to impossible. However, the equipment on the engine you describe would allow up to, and possibly above, 5500 rpm since the displacement of an engine has less than nothing to do with the speed that it turns. At an engine speed of 5500 rpm, though, the peak horsepower point has long been passed unless a full race or more radical cam is used. The one question here is whether or not the transmission dropped into intermediate range somewhere along the line. If the speedometer needle "buried" itself past the 100 mark and the transmission were in absolute low cog the engine would have been turning past the 9000 rpm mark. This is definitely impossible with anything but a Crosley. A flat-head Ford would have disintegrated long before this point. This would definitely indicate that you were in intermediate range and turning up about 95 mph with an engine speed of approximately 5600 to 5700 rpm. Even this is exceptional.—Ed.

ADD TWO, SPEED SHIFT

Dear Sirs:

I'm usually the first one to stick up for CAR CRAFT, but I'm afraid the gentleman is right about going into low gear. I was cruising along about 50 mph when I tried it. (*April CCM, Letters*)

First there was a howl of tires, then my

(*Continued on page 62*)

RACING

Tires Are Complex Pieces of Engineering

By Bob Behme

WHAT kind of tire is best? That's a question which can only be answered—"it all depends." The choice depends upon the ultimate use. Each tire must be engineered for its specific job and being designed for one purpose can not be expected to serve as efficiently in other capacities.

If you will refer to the cross-section drawing you'll see the construction of a typical tire. The bead is a hoop of high-tensile steel covered with rubber which encircles the outer edges of the tire. Its purpose is to prevent stretching while the tire is in service and to hold the tire securely to the rim.

The carcass is the skeletal component inside the tire which gives it strength. The fabric used for this section is laid in crisscross plies. Generally, cotton, rayon or nylon are used. Cotton provides the least amount of strength. Rayon is stronger and nylon is strongest.

Tire surface from the bead to the crown is called sidewall. This is the area which dissipates tire heat and, in the case of passenger tires, absorbs curb scuffing.

The tread is the wearing surface on the tire. It functions to protect the parts underneath as well as adhere to the road. It must be very hard with maximum resistance to abrasion and wear.

This represents basic tire design, however, these elements can be juggled in a myriad of ways to construct tires for a wide variety of uses from heavy-duty trucking to 250 mph straightaway racing. Tires can be made to stand up for several years or several hours. A good example: passenger and racing tires. Passenger tires are designed to withstand age. They must be impervious to the sun and rain and last without cracking long enough to be retreaded several times.

Racing tires, on the other hand, need not be so serviceable for great lengths of time. Theirs is a quicker service. Designed to last but one race they must withstand tremendous abrasive pulls during that period and at the same time provide perfect wheel adhesion.

Why but one race? Because quick service allows a more rigid metering of the tire's actions. Heat dispersion is critical in a racing tire. This is not true of passenger tires which are seldom subjected to speeds above 70 mph and rarely grow hotter than 175 degrees F. The heat which passenger tires generate is easily contained by the construction of the tire.

But take these same tires, roll them at higher speeds, say 120 mph, and the heat rises sharply to over 275 degrees: virtually impossible to cope with in such design. It is this heat which is the real villain of high-speed rubber. It is the cause of most racing tire failures. As the tire revolves its tread and walls flex. The flexing action induces "power absorption." It creates an energy force in the molecular structure which is rapidly converted to heat. Since a tire can withstand only a portion of the generated heat the excess must be eliminated.

Tire heat is dissipated in the only method possible: by working through the sidewall to the surface where it can be absorbed by the cooler air. The thicker the sidewall the more difficult it is for the heat to work its way to the cool air.

Since passenger tires must, of necessity, have thicker sidewalls to protect the tire

RUBBER

Here Is How to Choose the Best Types . . .

from scuffing and curb wear, they are not capable of dissipating great amounts of heat. Racing tires are not limited by a need for thick sidewalls and can be designed with thinner areas to carry off the heat. As an example a typical passenger tire has a sidewall rubber coating thickness of .090 while a racing tire is only .010 thick.

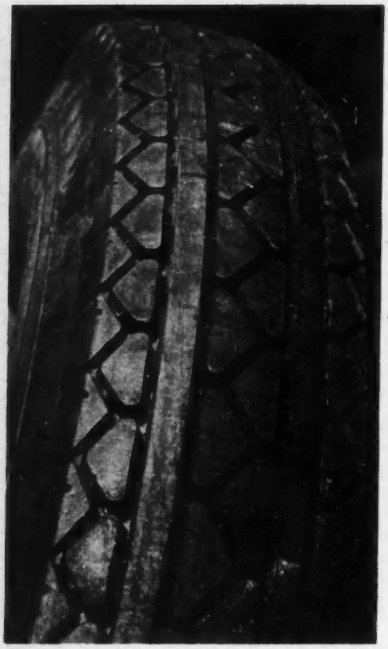
The type of rubber compound used is important, too. Generally, two kinds of rubber are used, natural and synthetic. The natural

(Continued on next page)

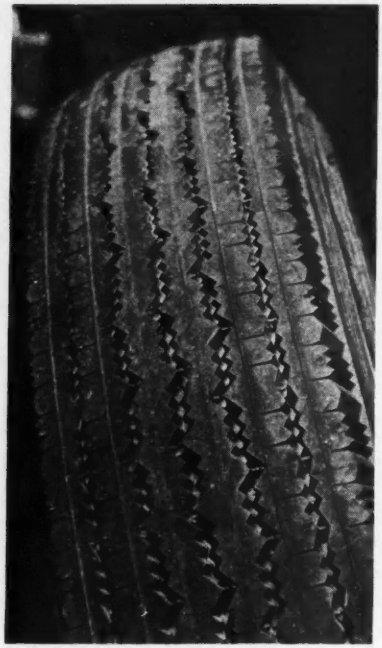
New 1954 Firestone Indianapolis front tire has three grooves, as opposed to two used in '53. Tread design is "modified diamond."

Bonneville tire remains basically unchanged from '53. Wearing surface is smooth and narrow. Grooves are for tire cooling only.

RACING RUBBER continued



Tread of Pirelli "Corsa" or racing tire is almost pure diamond type but contains smooth side-thrust ribs. Tire is of natural rubber.



Dunlop tire, like Firestone, has modified diamond tread. This is "Road Speed" type; racing version has the full diamond tread.

rubber is more flexible and is called "soft" rubber. Synthetic rubber, made from butadiene, is called "hard" rubber. Each has advantages, but to answer questions such as "which kind is best?"—"what size tire?" and "how much tread?" we queried well-known exponents of all types: Ken Miles, top sports car driver and champion of "soft" rubber; Ed Martindale and Ted Mangles of Mameco Engineering whose Glasspar sports car has done well on "hard" rubber; and manufacturers such as Firestone whose experience in racing goes back to the first Indianapolis meet in 1909.

All were agreed on one point: it takes horsepower to move tires. Therefore, if power is at a premium the smallest possible tire size with the smallest tread which will provide necessary road adhesion, is the answer. Such a tire takes less horsepower, causes less tire flexing and develops less heat. Because of its thinner wall it will dissipate heat better.

Soft and hard rubber each have champions. Ken Miles has this to say: "Soft rubber provides greater adhesion. It improves cornering. On a wet track it adheres well. Since soft rubber does not flex as much as synthetic it builds less heat and runs cooler. However, soft rubber does not wear as long as synthetic—about half as long. Because of this I'd match tire wear to the course. Soft

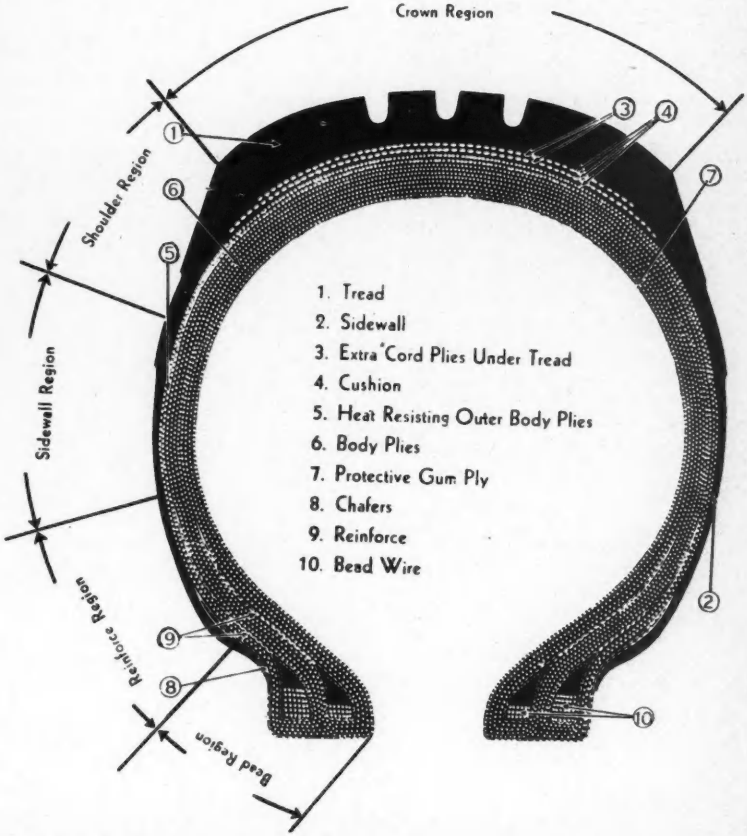
rubber tires such as Dunlop, Pirelli or M.G. tires which I use, are generally good for about 75 miles of racing. On a highly abrasive course such as Santa Barbara, I'd consider the distance. If it were longer than 75 miles I'd consider switching to the longer wearing synthetics to avoid a pit stop."

Mameco said, "We pick the synthetics. They wear longer giving us a safety edge with fewer pit stops plus an ability to 'burn rubber' on straightaway acceleration when we can. When the course is moderately abrasive we'd pick a synthetic such as the Firestone. If it were really abrasive we'd pick U.S. Royals which are slightly harder."

Tire size and tread size in either natural or hard rubber is dictated by the ratio of sprung weight to unsprung weight since this strongly affects handling and cornering. On the face of it this implies the smallest possible tire and other considerations back up this choice.

This is the main reason why, in many instances, equipping drag machinery with the largest tire size available may result in low-

(Continued on next page)



Cutaway diagram of standard six-ply truck tire shows construction of carcass, tread and sidewalls. Tiny white dots represent the cords used in building up the body. Bead is wire.

RACING RUBBER continued

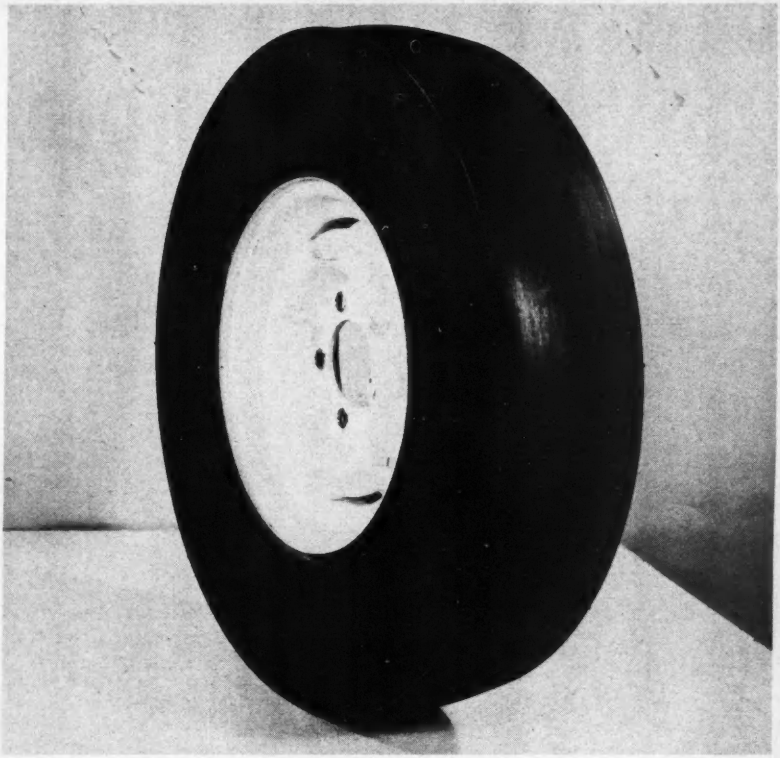
ered top speed and acceleration. The use of an oversize skin on such a car is just pouring horsepower down the chute. While it's perfectly true that the more rubber you burn the slower you accelerate, it's equally true that the weight of the rubber must be matched to the amount of horsepower put out by the engine.

A good example is that shown by Stan Weisbard's Model B Ford-McDowell dragster. (*See Cover Car, this issue.*) Stan was using 7.50/16 Firestone Langhorne tires and was able to crank up 105 in a short quarter. Switching to a set of 7.00/16 tires, he came up with 107 without any other changes. The weight of rubber dropped in the tire change actually accounted for two miles an hour gained in only a quarter of a mile! Had he been using twice the displacement and/or horsepower he would have lost rather than gained; instead, he matched tires to available power and gained a gratifying amount.

One of the big troubles with thick-treaded tires at high speeds is centrifuge action or the force generated by the spinning tire plus the heat thus induced. Tread rubber and

(*Continued on page 60*)

Dunlop road racing tire is outwardly indistinguishable from first-line, street machine passenger tire. Sidewall is lighter and tire is balanced to take speeds above 100 mph.

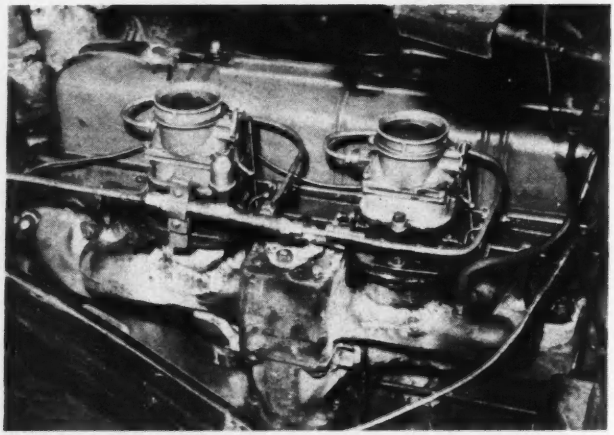


Asphalt "slick" tire, originally developed for sprint racing on paved tracks, now used for dragging. Treadless, slick is usually a recap. Firestone makes it in a few sizes.

Badly worn tire from Ken Miles' MG shows wear characteristics of road racing on U.S. circuits. Contrast worn tire on left with tire on right. Both are Dunlop natural rubber.

BUILD YOUR OWN

CHEVY DUAL MANIFOLD



Effective dual carburetion for any straight six or eight cylinder engine can be easily constructed at home as was this Chevrolet set-up.

Text and Photos by Edward Monroe

YOUR Chevrolet can be equipped with a dual intake manifold and two carburetors, such as the one shown in the accompanying pictures, all for ten dollars, providing you do the work yourself.

In making the conversion described, the writer used two Stromberg model 81 carburetors salvaged from V8-60 Fords for $1.50 each. The material used in welding and brazing came to about $3.50. Other miscellaneous materials salvaged from junk were valued at about $2.50.

Before starting work on the manifold, the make and model of carburetors to be used was determined. Stromberg model 81 carburetors were chosen for several reasons. First, it was desired to find a carburetor for an engine having a little more than one half the displacement of the Chevrolet, which has 216.5 cu. in. in stock form. The V8-60 had 136 cu. in. displacement, therefore two of these carburetors would serve a flat head of 272 cu. in. Considering the somewhat better breathing characteristics of the Chevy, two model 81's should give somewhat improved performance at high speed than the single stock Carter W-1. Since it was desired to retain good carburetion at low speed, it was considered inadvisable to use carburetors designed for a larger engine. Second, the Strombergs are easy to overhaul and adjust. Third, they are readily available at any junk yard at a moderate price.

To accommodate the double-barreled model 81's, special necks or risers were fabricated. This was accomplished by taking a piece of 1 inch tubing 2¼ inches long and splitting it in half. Two pieces of sheet

steel were then welded between the two half sections. A pattern for the flanges was made by tapping out a piece of paper on the base of one of the carburetors. This was then transferred to a piece of 5/16-inch steel plate. After the flanges were cut out, they were welded to the necks.

Using the necks as a template, holes were marked out on the stock manifold in such a location that each riser would be exactly half way between an end port and the center port. These holes were then cut out by drilling a number of holes next to each other around the mark with a small drill. After the piece was removed, the roughness left by the drilling was smoothed away by careful chipping with a chisel and then grinding lightly with a utility grinder and small stone.

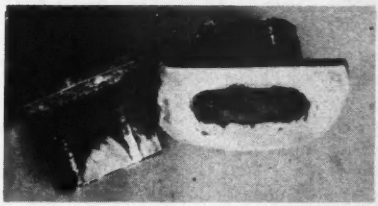
The manifold was then clamped in a vise with the center flange exactly level. A straight edge clamped to the flanges of the new risers was used to make sure they were both in line with each other and the manifold and also level before they were brazed to the manifold. The necks were then brazed to the manifold. Pieces of plate were then cut and drilled to hold the throttle shaft. Care was used to make sure that these were the same height and in line with the manifold.

It was originally planned to block off the center flange with a piece of flat steel plate but this would leave a pocket in the manifold and might have an undesirable effect on performance. Therefore, one end of a piece of 1¼-inch pipe, three inches long, was blocked off by welding on a round piece of plate. A hole was cut in the blank flange and it was slipped over the pipe. The pipe was then blocked up in the manifold in such a position that the blocked end was just even with the top of the main manifold passage. The flange was now bolted to the manifold and brazed to the pipe.

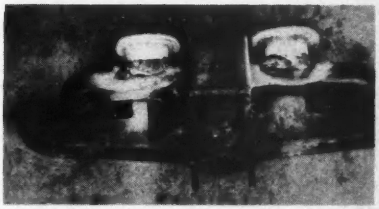
In order to attach the distributor vacuum line, a hole 9/16" deep was drilled in the base of one carburetor with an R drill. This was threaded for 1/8" pipe. A hole was then drilled on a slant with a #29 drill, so that it would pass through the larger hole and continue on to enter the carburetor throat. This was drilled to within 1/8" of the throat, then a #52 drill was used to continue into the throat. The hole made by the #29 drill

(*Continued on page 19*)

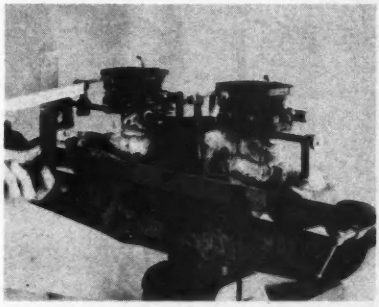
Cut two elongated holes in the stock manifold as shown here. Clean well for brazing. Width of hole is width of both carb throats.



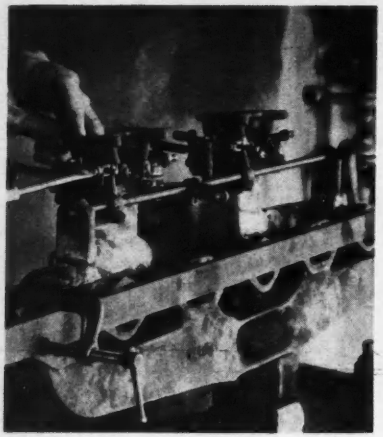
Make risers or necks from tubing and sheet metal. Flanges are cut from 5/16-inch stock, welded to the necks, then are filed flat.



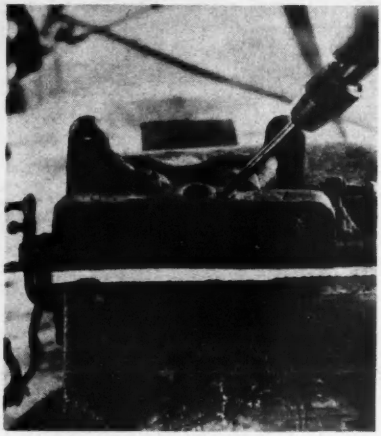
Carefully braze the necks to the manifold, taking care not to get braze inside balance tube. Make absolutely sure necks are even.



Drill and mount carburetor bases using base as a pattern. Mount linkage supports as described. Use ruler and square as shown.

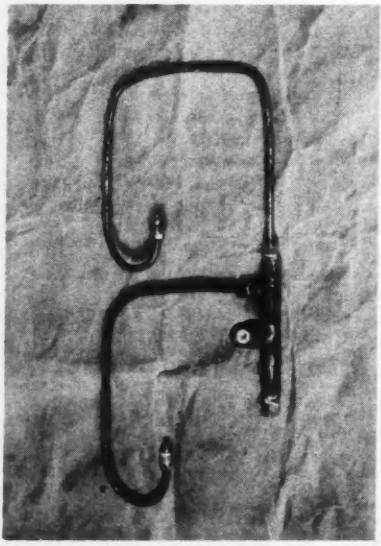


Adjust carburetor linkage to provide perfectly equal travel for throttle arms. Make sure that both butterflies close together.



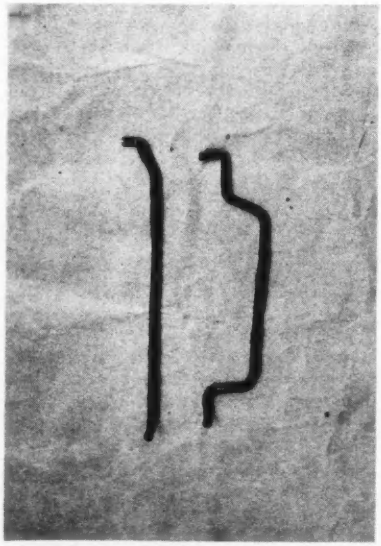
One of the carburetor bases must be drilled and tapped to accommodate the distributor vacuum line to assure a proper spark curve.

Block pipe off at BOTTOM end as shown here. For a neat job the top end can also be covered over although this is not necessary.



Fuel log is made from ½-inch I.D. pipe with fittings silver soldered in ends. Pressure dome is from Hudson fuel pump.

Block a piece of pipe in the original intake as described in the text and braze a standard flange to it to avoid manifold "pocket."



Throttle rod was bent as shown at right to fit around manifold. This operation is strictly trial and error to get a good fit.

CHEVY DUAL MANIFOLD

continued

was then tapped for an 8-32 screw which was used as a plug.

The fuel log was made by silver soldering fittings to a four-inch length of ½-inch steel pipe. A pressure dome, salvaged from a Hudson fuel pump was added to damp out pressure surges from the fuel pump. Some used quarter-inch tubing was used to connect the fuel log to the carburetors after first having been annealed.

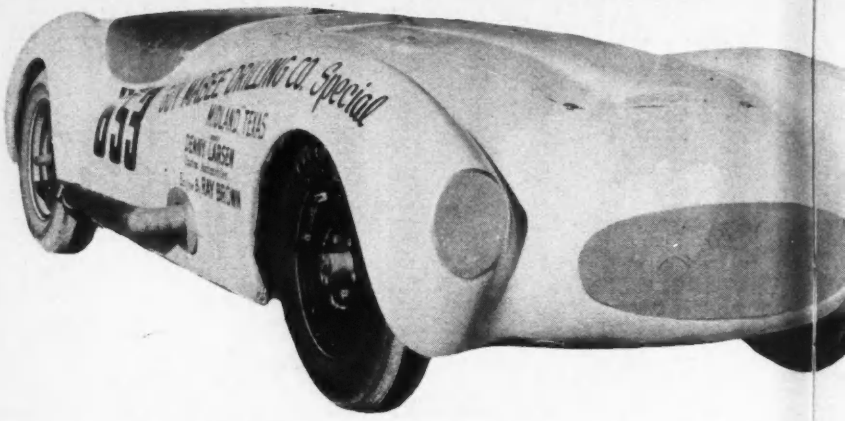
Care was used when clamping the throttle levers to the throttle shaft to insure that they were in line with each other. In attaching the linkage to the carburetor, the length was adjusted so that the levers on the throttle shaft were parallel to the levers on the carburetor butterflies, and so that both carburetors were fully open and fully closed simultaneously.

Strangely enough, the throttle rod was one of the most troublesome parts of the whole conversion, and much trial and error bending and cutting was necessary to arrive at the correct length and shape to clear all obstructions.

After warming up the engine a little, the tops of the carburetors were removed and the distance from the parting surface to the top of the fuel was checked and adjusted to the recommended $1\frac{5}{32}$" by bending the float levers slightly. A vacuum gauge was used to adjust the idling mixture, turning one screw at a time until the highest reading with least fluctuation was obtained. It was necessary to grind down the throttle stops in order to allow the throttles to close sufficiently to obtain a reasonably slow idle.

The low speed performance remains about the same as that obtained with the single carburetor. This was expected. From about 35 mph and up there is a very gratifying improvement in acceleration and increase in power.

While the manifold described is for a Chevrolet, the same general procedure could be used for converting manifolds for other makes of cars.



If you're sports car minded, Joe Mabee's "Streetliner" is the car to beat . . . 203.105 mph!

NEW RULES FOR

BONNEVILLE time is about with us again and with it a change of rules that may bid fair to increase competition, particularly in the small engine displacement classes.

The big change is that *any* breed of internal combustion engine can be used. This means you can use any mill whether it was made in Detroit, Abingdon-on-Thames, or Lower Slobbovia. If it runs on gasoline, alcohol, kerosene, nitro or extract of old socks and you think you can pack enough gow into it you can use it. It also means that if you have an American Bantam roadster or coupe that isn't big enough to stuff an American made mill into you can use an MG, Osca, Simca or other foreign mouse-sized plant and still run as a hot rod. If you think it'll do you any good (and you have the loot) you can run a Jag or a Ferrari in your Deuce.

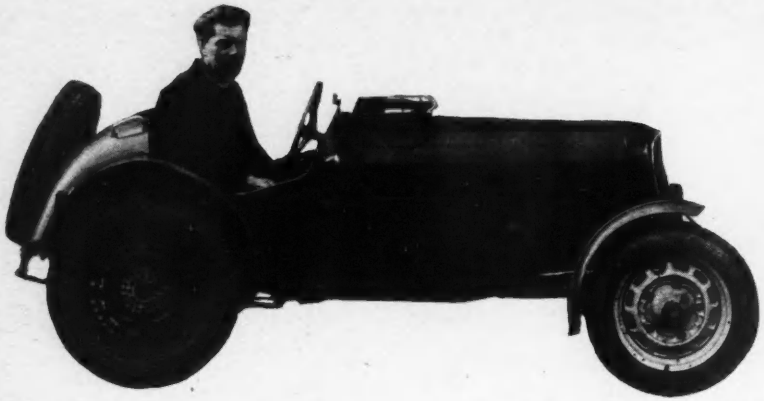
The Bonneville committee was also emphatic in pointing out that if you want to run in the sports car category you're not only invited but actively encouraged to drag it out. The only limitation on the sports cars is that they comply with the regulations defining same, be they back yard, foreign or domestic production. Sports cars are divided into two body classes and two engine classes: Open and closed bodies, either over 91 cubic inches (1500 cc) or under that displacement. Fuel is optional in all classes for qualifying runs, due in part to the limitations of high altitude. Gasoline must be used for record runs. Use of a blower will put the car in the over 1500 class regardless of size. Both SCTA and FIA safety and body regulations apply with the exception that cycle-type fenders may be used.

Another change that will benefit the owners of small sized power plants is that the class formerly designated as "0" has been broken into two classes of "H" or 0 to 48 cubic inches and "0" or 49 to 91 inches.

In addition to the above engine classes there are five others: A—92 to 183 inches, B—184 to 260 inches, C—261 to 305 inches, D—306 to 488 inches and E—488 inches and over. Engines equipped with superchargers will automatically advance to the next higher competition class. This also applies to cars factory equipped with blowers.

For entry blanks and further information write to Bonneville Nationals, 9030 Costello Avenue, Van Nuys, California.

BONNEVILLE



Size of Bob Gregory's trials buggy is apparent from the contrast with size of builder.

TINY BUT TOUGH

AMONG the younger generation of post-war British trials drivers, one Bob Gregory is a known consistent performer. He, in one of the least costly "Trialsters" yet seen in England, time after time rates high in the "Special Time Tests" in many British trials.

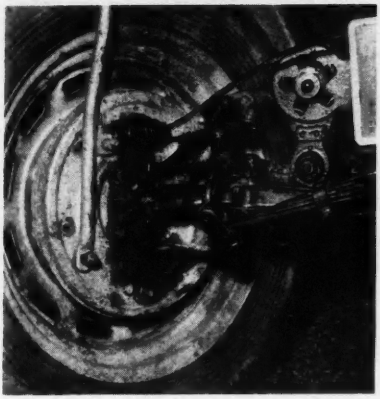
It is not surprising to those who know this lad with the graying hair and quick smile who has spent his life in his father's garage. A fine mechanical knowledge is further enhanced by a complete and thorough know-how of welding that has gained for him high recognition, so much so that he is assigned Air Ministry work of a most exacting nature.

At the cost of burning the midnight oil and spending many hours among the automobile junkyards and graveyards looking for bits and pieces, he has built several trials cars in the last few years. These ranged from a big V8 to the car in present use (described in these pages) to a wagon now on the stocks that is to be used in Britain's latest craze, Auto Cross or Car Scramble.

The chassis of the car depicted is that of a standard Austin 10 h.p. adapted to take a Ford Ten engine unit. This has been altered since the vehicle was first made to comply with a R.A.C. regulation that called for a longer wheelbase. Consequently this chassis now has what is commonly described as a "suicide" front suspension.

The front axle is from an old Ford Ten. It was of standard pattern but has been inverted and carefully formed and bent to correct the inclination of the king pins. The brake plates have been turned upside down and are actuated by cables instead of the familiar Ford brake rods. This, of course, gives added ground clearance and prevents many a tangle with the undergrowth or tree roots, etc. Though friction type shock absorbers are readily seen in the illustration, these are not normally used in a trial. They were, as a matter of fact, fitted temporarily so that the owner would have a little easier ride in an Auto Cross meet.

The rear axle was salvaged from an old War Department Austin having, it is plain to see, half elliptic springs. Light alloy, drilled plates are used as a method whereby Ford truck wheels 18 inches in diameter could be attached to the Austin unit and so enable the builder to snatch another inch of ground clearance. The photo showing the rear wheel gives a fine example of drilling for lightness and a closer look enables one to see the self tapping screws for securing the tires. Bob



Front axle and brake drums have been turned upside down to provide clearance.

Jacked up front wheel illustrates the flexibility that is built into a trials buggy.

HERE'S THE STORY OF A TYPICAL TRIALS MACHINE

By Bill Onslow

uses 12 (6 on each rimside) per wheel, and believes them to be ample though some builders use twice that number. However, they are a must, for running with tire pressure of only two or three pounds, skins are apt to shed fairly frequently unless they are securely fixed. Though tires are often torn off, the point of using screws is to prevent tire creep and consequent tearing out the inner tube valve. Some drivers use heavy commercial valves and trusting that they are sufficiently strong enough to resist tearing, permit the tubes to creep. Still no matter what method is chosen the precaution is obviously only needed on the rear wheels.

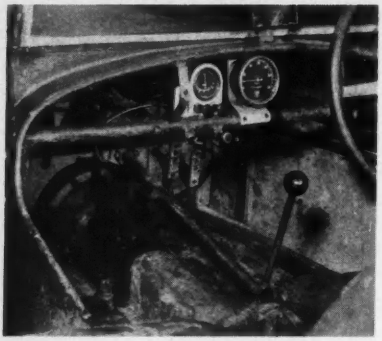
Forward of the fire-proof bulkhead, built to comply with strict regulations, a standard Ford Ten cylinder block is topped by a Ford Eight cylinder head that serves to raise the compression ratio by about two points. It can be noticed that two carburetors are used and these were pirated from a couple of old Morris 8 h.p. sedans.

Not wishing to use a supercharger, which gives added weight to the front end where it is most definitely not wanted, Bob did a little souping up by other methods. The ports were ground out about ⅛ in. and the valve guides taken to the floor of the ports to improve the breathing. Then, by merely fitting double valve springs he finds that he can turn up about 6000 revs as against the usual 4000. This is quite an asset in rigorous trials work that calls for almost unlimited bottom gear work. The exhaust stack, clearly a bunch of bananas, terminates in an outside, straight-through, Hollywood motorcycle muffler and this again is located high to provide clearance.

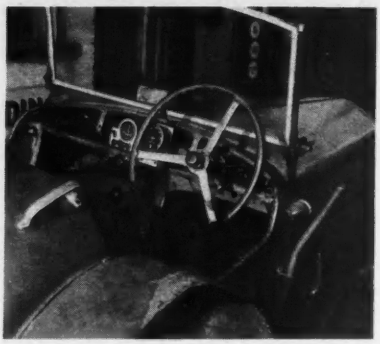
The ignition system is normally covered with a waterproof material because Bob prefers to use a fan rather than having to keep filling up the radiator as do many competitors. He does find in the wet and muddy trials that the said fan distributes water ad lib, but says "Heck, I'm too lazy to keep cooling the kettle. Once the wiring is covered I hope for the best." He did, while on this subject, imply that he found little difference if he fitted the vehicle with a magneto. One almost forgotten point to do with the power is the quick action accelerator that simply cannot be omitted on a car used for such competition work for speed off the mark is the answer to many mud plugging problems.

The car utilizes a Ford Eight gear box preferred to the 10 h.p. because of the

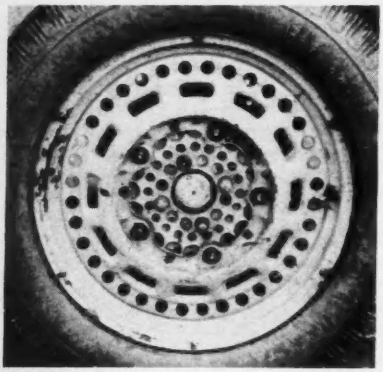
(*Continued on next page*)



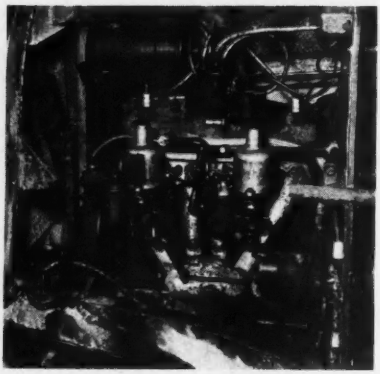
Gear shift has been made remote a-la Allard, and cowl-bar forms grab rail for passenger.



Cockpit is stark and simple for lightness and roughness. Note the outside hand brake.



Wheels are liberally lightened by drilling as is adapter plate. Tire is screwed on.



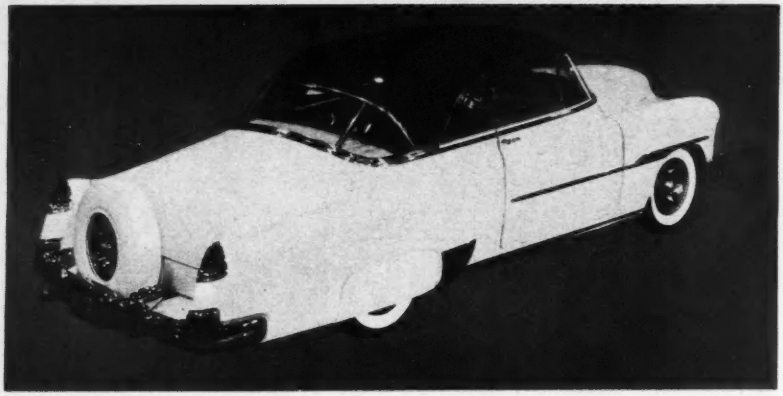
Engine is Anglia type Ford 10 with twin Morris S.U. carburetors and Ford 8 head.

Front suspension is suicide type with cross spring. Axle has been reversed and rebent.

Spare tire hangs over rear end to add weight to drive wheels for better traction in mud.

Body work on Gregory's car is as simple as possible to save weight and give clearance.

CONTINUED ON PAGE 65

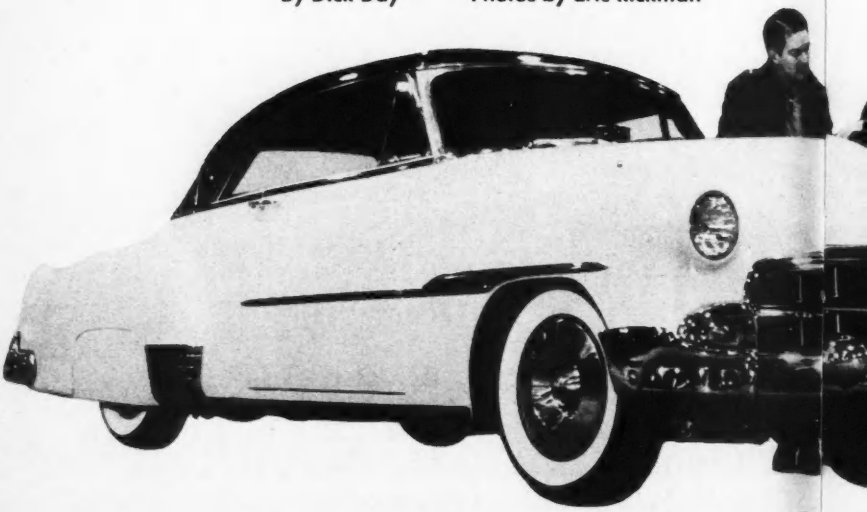


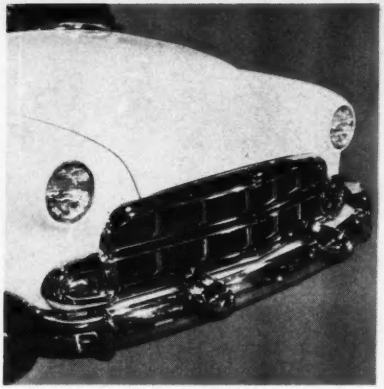
The biggest item that usually defeats the appearance of a car restyled with longer fenders and larger taillights is proportion. Builder Wilhelm executed this one innovation with beautiful finesse. Rear sections of '50 Caddy fenders were sectioned to the stock Chevy's, just forward of the rear tips. The over-all extension measured one full foot.

Fresh off the vine comes this

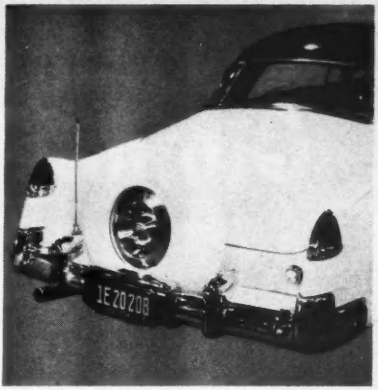
GRAPE COUNTRY

By Dick Day Photos by Eric Rickman



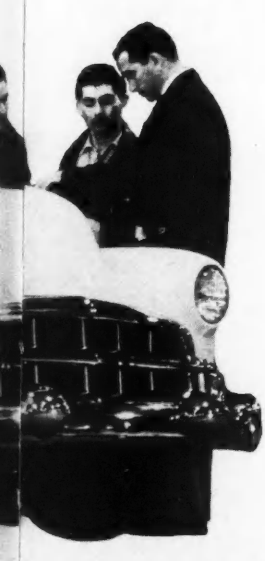


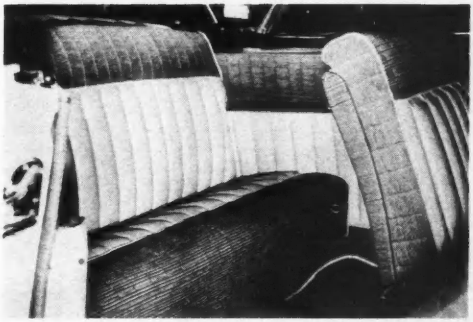
Stock Chevy's grille was removed except for parking lights. Center section of a '49 Cad grille was installed. Bumper guards are '53 Merc. Hood is nosed and lights frenched.



The continental kit is stock, but is built so that the deck lid can be opened without disturbing the kit. Cad guards are adapted to stock rear bumper. Hubcaps are '53 Cad.

CUSTOM

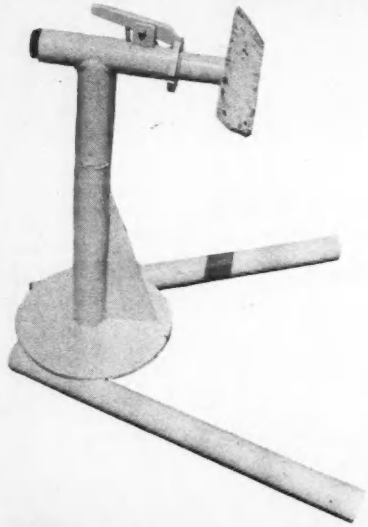




ABC Upholstery Shop of San Jose did the interior in a Tahitian motif of two-tone blue, contrasting the exterior's body color of pastoral and dark blue top.

It's fairly obvious by the title that this little jewel originated in Manischewitz land, sometimes referred to as San Jose, California. Pictured at left is Joe Wilhelm, builder, and Abe Sanchez, owner, giving associate editor Day all the technical data as to how the Chevy went together. Sanchez, who has owned conservative customs before, finally took the plunge for a semi-radical design when he became the owner of this '51 Bel Air. The theme of design was hashed over time and again 'til it was decided to make the Chevy a replica of a baby Cad. Upon completion, which took approximately twelve months and $900, the car was entered in the San Jose Auto Show and took a solid second place in the custom class. Abe's comment was, "All I need now is a chromed Chevy V8 powerplant."

Garage Gimmicks

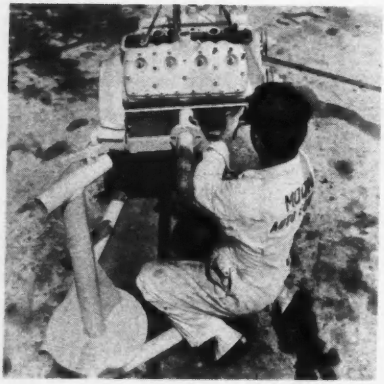


Text and Photos
by Dean Moon

SWINGING ENGINE STAND

ENGINE overhauls with the engine in the chassis are not the easiest bits of work in the world. Out of the chassis the job can become even more troublesome if the engine has to be shuffled about by hand. Each operation requires a different engine position if the work is to be done with the least amount of effort.

Use of a universal type, swinging stand allows much faster and neater work with a minimum of curses, bruised fingers and lost parts. The old saw about a craftsman being only as good as his tools really stands true in this case. With about five bucks' worth of scrap metal and pipe together with a few



To mount engine on stand, fasten adapter to exhaust manifold flanges or to side plate.

Swing engine around and insert adapter stem clear into the pipe on top of engine stand.

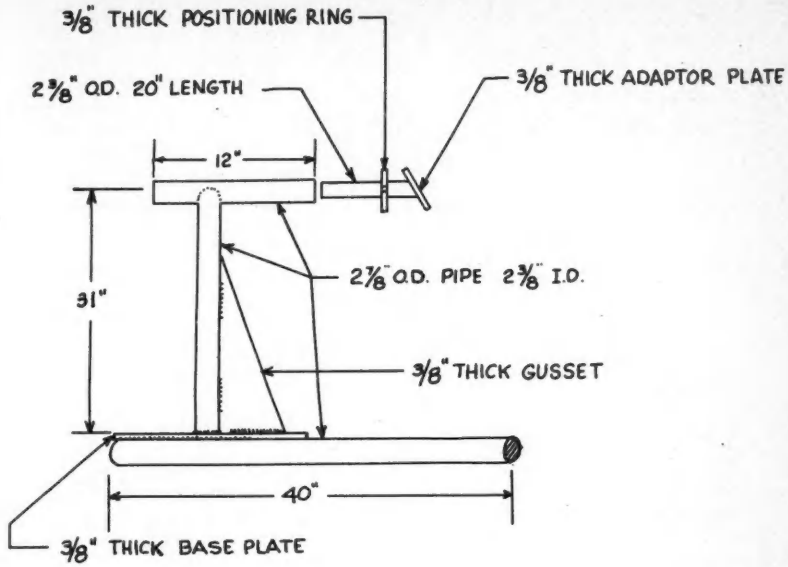
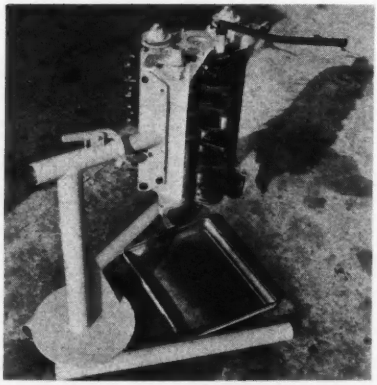


Diagram shows entire stand and measurements of all the components used. These measurements may be varied according to the engine size which will be worked on.

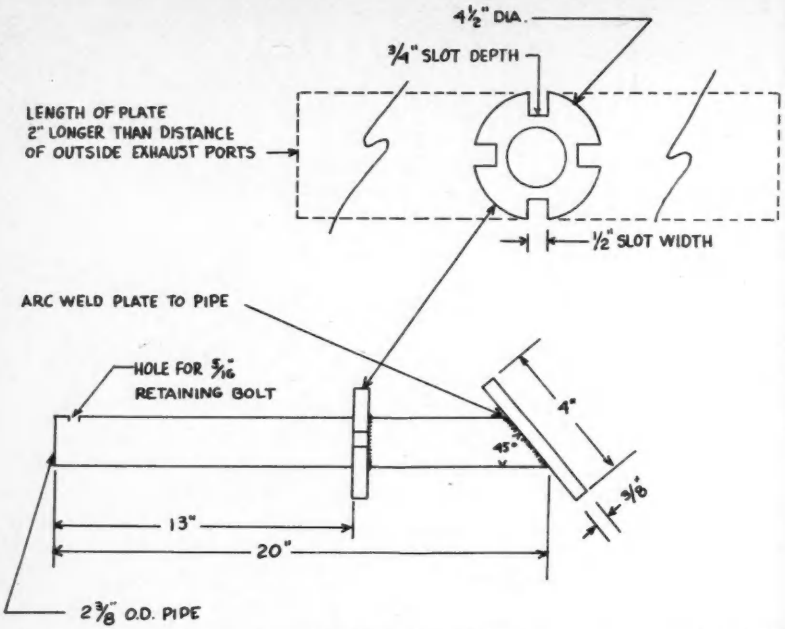


Lock stem into pipe by means of a bolt set into back end of stem. Engine may now turn.

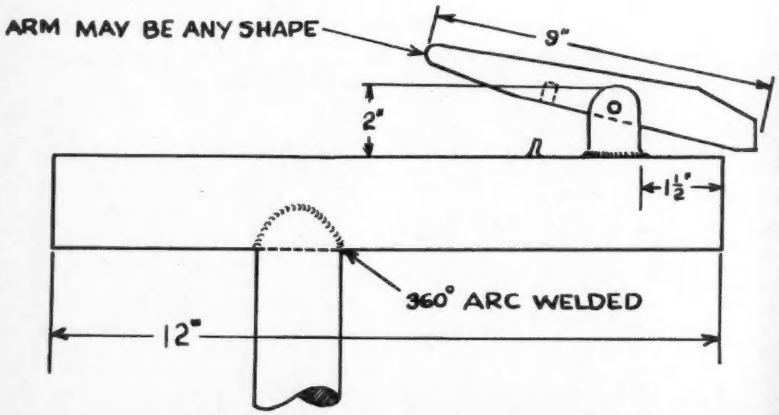
hours of easy labor you can put together an engine stand like that shown on these pages and save yourself hours and dollars in time.

Main components needed are 10 feet of pipe with an O.D. of 2⅞ inches and an I.D. of 2⅜ inches, together with 20 inches of 2⅜ O.D. pipe. The base plate, gusset, locating ring, locating stop handle and adapter plate may all be made from either 5/16 or ⅜-inch flat plate, flame cut to size and shape. The amount of plate needed can be determined from the diagrams. The adapter plate is set diagonally on its stem for V8 engines and perpendicularly for straight fours, sixes or eights. If you plan on handling several types of engines, it's best to make several adapters at the same time.

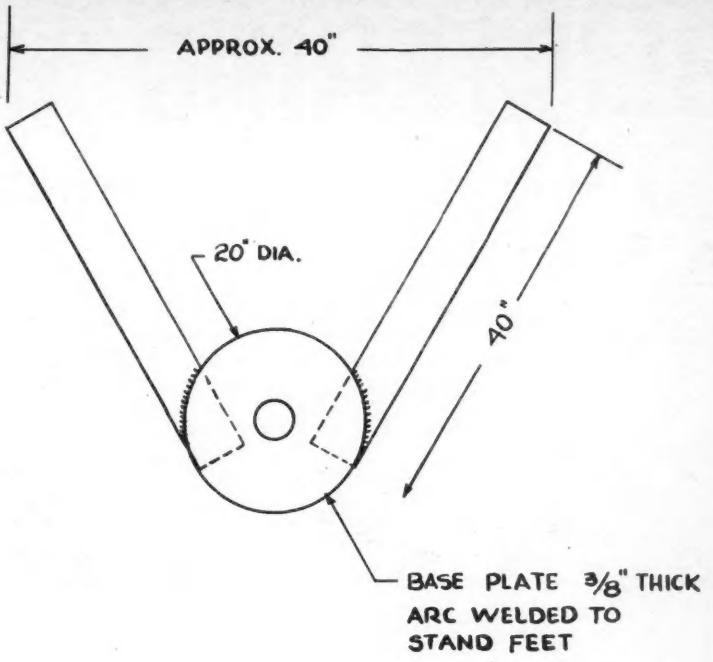
CONTINUED ➔



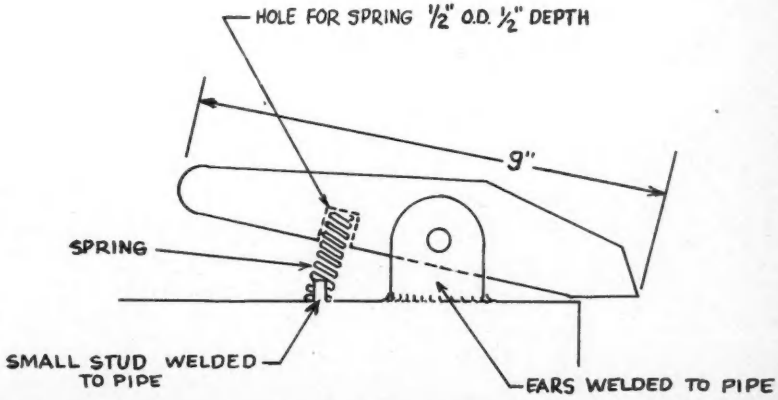
Adapter plate stem is made from 2⅜ O.D. pipe to fit inside upper arm assembly. Positioning ring is cut as shown and welded 13 in. from rear end of stem to form stop.



The upper arm assembly and positioning ring lock are shown here from the side. It is important that all arc welds be perfect at point of juncture between stand and arm.



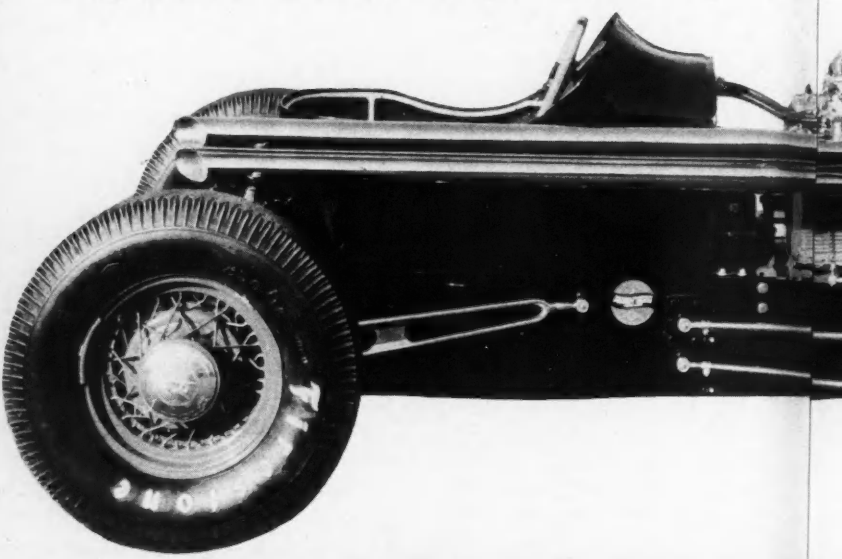
Form base plate from 3/8-inch plate cut to a circle 18 to 20 inches in diameter. Stand pipe is welded at dotted circle. Be sure that legs extend past length of upper arm.

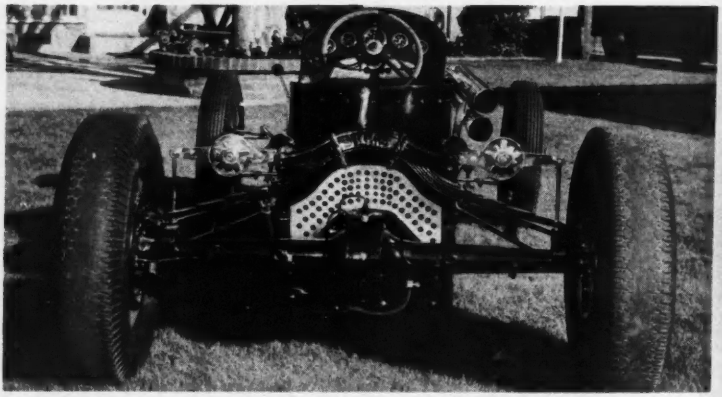


Positioning ring lock arm is made from 3/8 inch flat steel plate as shown. Spring is taken from Ford oil pressure control valve. Note the positioning stud inside of spring.

BLISTERING 'B'

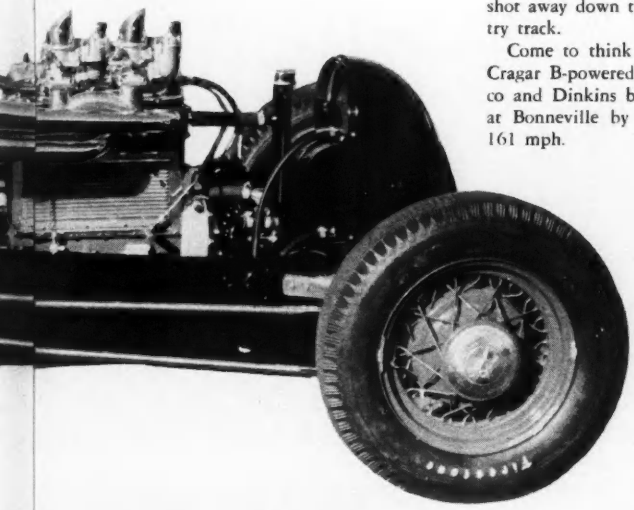
A MODIFIED RETURNS—JET HOT!





Rear aspect shows special plate cross-member and cut-down Model A member.

Photos by Bob D'Olivo



ONCE upon a time, not too long ago, the name Cragar was pronounced "speed." In fact, it wasn't until the big-bore, big-stroke Merc and the chemistry crew got together in close harmony that records ceased to fall to the overhead-valve converted Model A's and B's. The writer remembers a time about five years ago when a double-overhead Hal B-powered car scattered dirt all over his nice new Merc race car as the Hal shot away down the back straight of a country track.

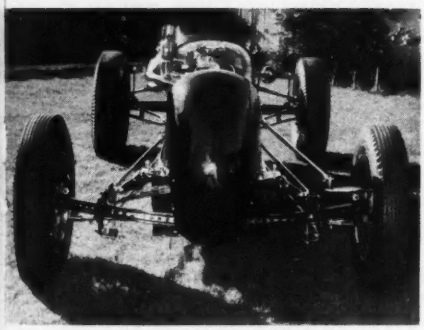
Come to think of it, only last summer a Cragar B-powered belly tank owned by Vesco and Dinkins blew off everything in class at Bonneville by cranking on a nice, even 161 mph.

Now comes Stan Weisbard, a hot rodder with some 15 years' worth of experience in building rapid equipment, with another threat to the established hot shots. This time the area of battle is the drag strip where recently Stan turned in a speed of 105 in the standing quarter on a tune-up run.

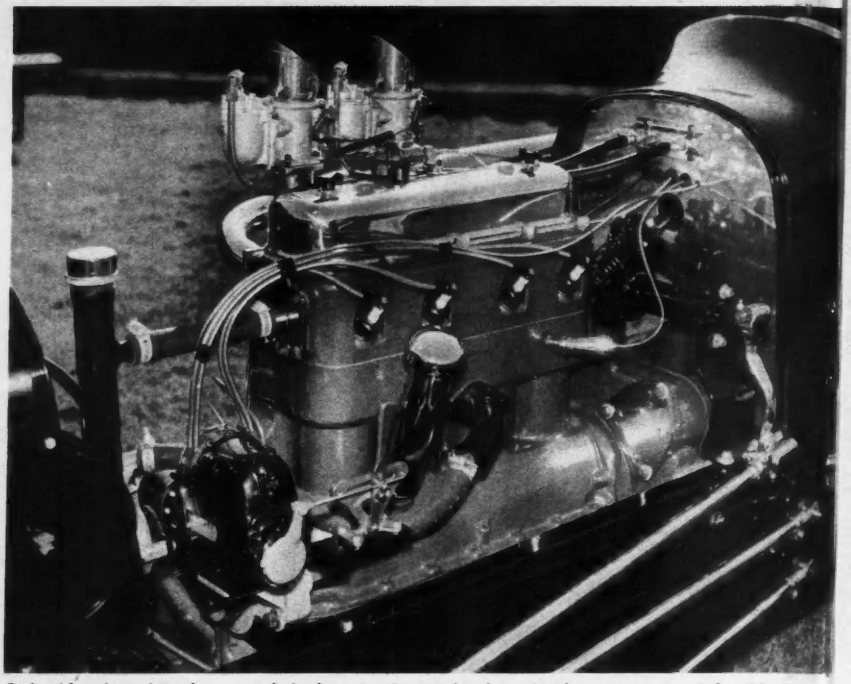
No newcomer to competition, Stan's super-immaculate B Modified is a long time veteran of the dry lakes. The term "Modified" is in itself a clue to the age of the car, this class having seen its last days just after World War II. Stan picked up the car from a friend of a friend in somewhat worse than disreputable shape. Covered with the dust of many lakes duels, battered and with a fairly heavy steel body, the car needed much work.

Though battered, the chassis was sound. The rails were unique, having been bent from light gauge sheet stock into light, straight channels and equipped with tube cross-members. Axles, front and rear, were Model A, as was all of the running gear. Stan took the chassis apart, piece by piece, cleaned each part down to bare metal and then painted and reassembled the parts with painstaking care.

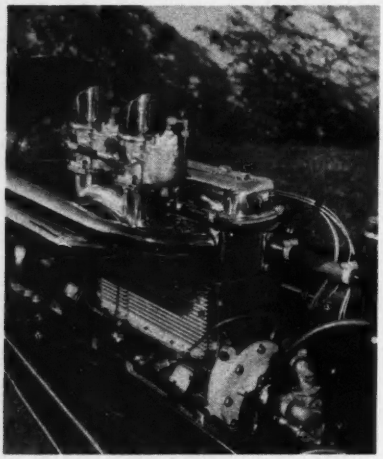
(*Continued on page 35*)



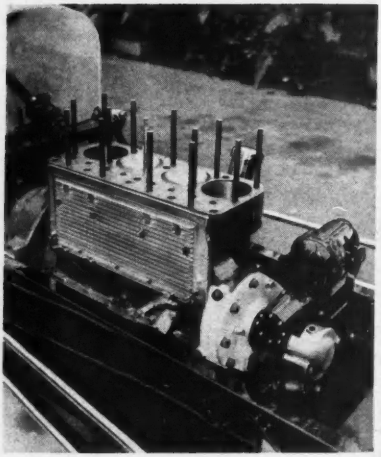
Front axle is Model A, drilled out at web. Nose is cut down Victress Fiberglas shell.



Left side of engine shows angled plugs in Cragar head, a simple contrast to right side.



Carburetors are Winfields set on almost extinct George Wight intake. Pipes are split.



Special long studs are needed to mount the Cragar head. Pistons are high-dome pop-ups.

BLISTERING 'B'

continued

The body was dumped in the backyard and a new one built of Fiberglas by "Doc" Boyce-Smith, of Victress, to Stan's specifications. So successful was the body that it has now been put into production by the Victress Company.

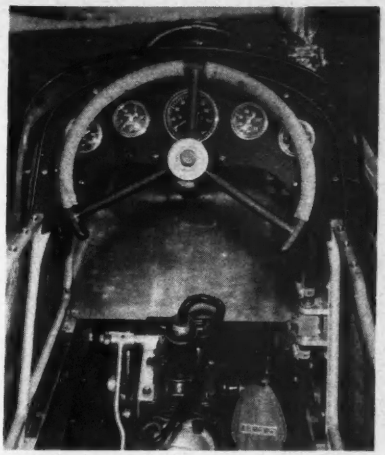
The original radius rods were also given the deep-six and replaced with tubular locators of the sprint car type. Newly rebuilt Hartford friction type shock absorbers were installed fore and aft and all of the running gear gone through and inspected for flaws. As each section went back together, every nut and bolt was either cadmium plated or chromed. Every part of the body and chassis not plated was given a heavy black lacquer paint job and rubbed to a glistening finish.

For power, Stan, a Model B fan from way back, chose a four-inch bore by four-inch stroke B block with a C crank drilled for oil pressure. This was equipped with a set of high-dome pop-up type pistons. Stan was running in luck at the time, too. From another friend he heard of a sprint car that was about to be retired. The race car had been equipped with a B engine with two head set-ups, one a single-stick McDowell and the other a Miller-Schofield (later known as Cragar). The block was somewhat shattered due to a rod parting company with its moorings but all the rest of the equipment was there, mag, oil pump, side plates; in short, the works. Stan took everything in charge. Also in the package were a set of beautiful split headers. The lad already had a nice set of Winfield Model S carburetors and a George Wight manifold.

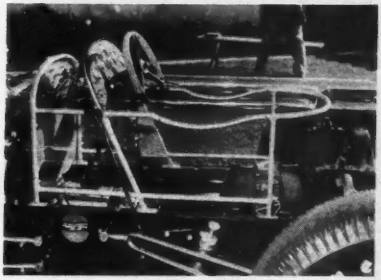
The engine went back together in the same painstaking way as had the body. Everything was gone over and worn parts replaced, even at the cost of making new valves. Our cover picture gives a slight idea of how it looks now.

Removing the hefty Model B flywheel, Stan installed a small, seven-pound degree wheel and a multiple disc clutch of pure race car design. Other goodies in the engine include an Iskenderian Number 80 cam and a Bendix Scintilla magneto with manual ad-

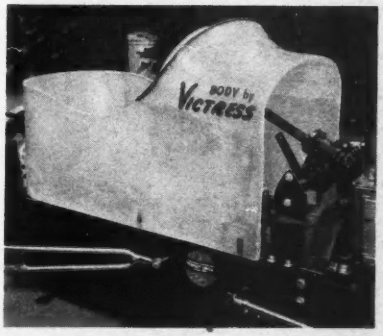
(*Continued on next page*)



Cockpit is standard race car type except for cut-down wheel to allow for leg room.



Body frame was built by Stan from conduit tubing to re-inforce the Fiberglas body.



Body shell is two-layer Fiberglas unit by Victress and is set for early production.

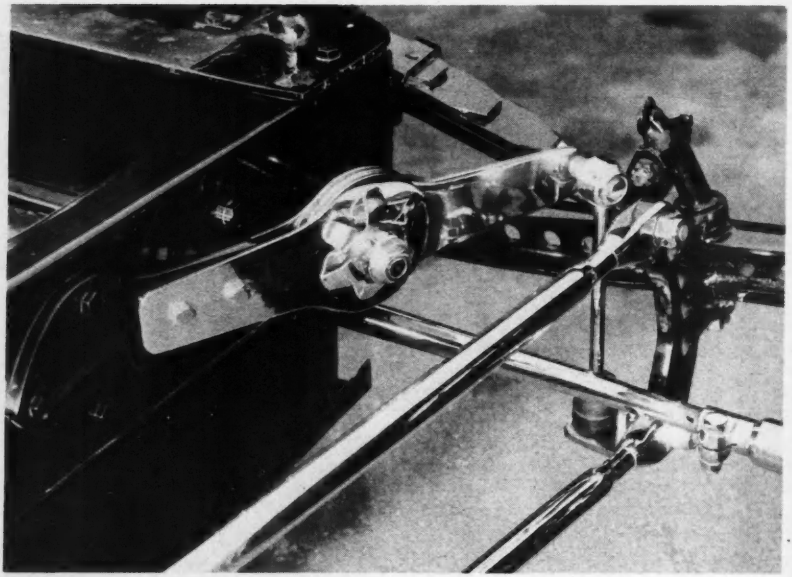
BLISTERING 'B'

continued

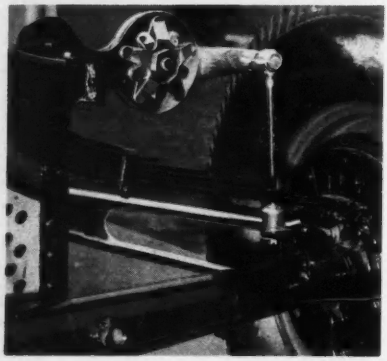
vance and retard. Compression ratio with the pop-up pistons and Cragar head is 11 to one.

Almost exactly one year from the day he started, Stan trundled the car out to a local drag strip and fired it up. One push and it kicked over as if it had been running that way since 1932. Pulling huge 7.50-16 Langhorne tires, the car clocked a cool 105 on a warm-up run. Switching to 7.00-16 skins, Stan decided to really stand on it. Halfway down the strip the head gasket let go and the car coasted through the trap at more than 90 miles an hour—not bad for an eighth-mile wind-up.

It just goes to show that if you're an A or B four-barrel fan you don't have to take sass from anybody. All it takes is persistence and a little luck in finding the right parts.

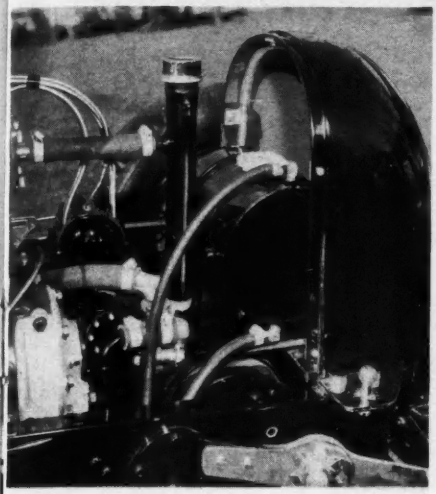


Shock absorber is a Hartford friction type unit giving same damping effect throughout its travel. Radius rods were built by Stan.

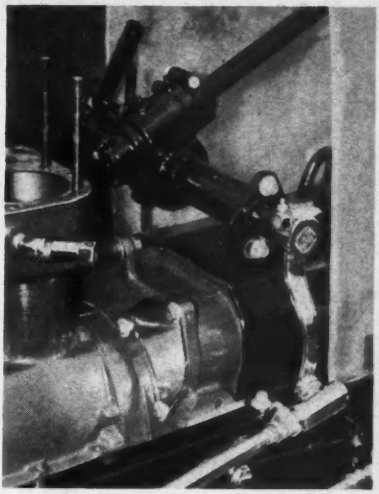


LEFT—The rear shocks are also Hartford, set transversely. Spring is Model A Ford; with the light weight it gives stiff ride.

RIGHT—Bendix Scintilla magneto was part of equipment salvaged from the sprint car. Mag is equipped with manual advance lever.



Car does not have radiator, cooling being by transfer tube. Large tank is for fuel.



Steering sector is reworked Franklin unit which came with Modified when Stan got it.

The '52 Ford that was customized to save money on a '54

Text and Photos by Bob Behme

NOT all customs are costly. The final price tag depends upon what is done and the end result. Here's a car that was "face lifted" two years ahead of its time for a price that would put a piggy-bank to shame.

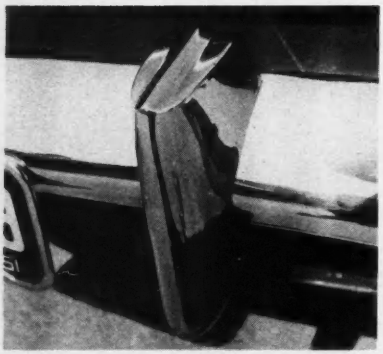
Wayne Rogers, a Glendale, California painting contractor, purchased a new Ford Sunliner convertible in 1952. He planned to drive it for two years then trade it in for the '54 model. That was the way it was supposed to go, but the years slipped past and it was '54. The trade offered by Rogers' local dealer was such that he stood to take a $1500 depreciation. He figured he could do better elsewhere.

But Rogers figured wrong. Everyplace he took the car he got the same story: $1500 plus his car. Since he had but 20,000 miles on the car he decided there must be a better way of getting a new car.

"If I have to lose $1500," Rogers reasoned, "Why not put the money into customizing and get exactly the car I want. Since the '52 body is almost identical to the '54 I could actually have a customized '54."

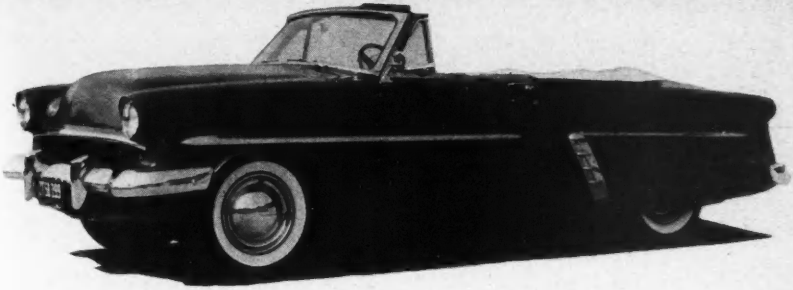
Rogers liked the Ford's basic design. The changes he had in mind were few, but enough to give the '52 a new look. He took his problem to Neil Emory and Clayton Jensen of Valley Custom in Burbank. Their design was planned to embody Rogers' ideas. The basic customizing work began: nose and decking plus some minor chrome changes. Next, came new taillights, designed to modernize and accent the Ford rear fender line. The front was restyled to go beyond the current '54 styling. The grille was removed and the bumper raised to work as both grille and bumper. The headlights were shaded to give the Ford a "look into the future."

Everything which was done was done with the idea of giving Rogers a car which would be newer than the stock '54 he didn't buy. The clincher came a few days ago when a dealer offered Rogers $100 more than he paid for the car stock.

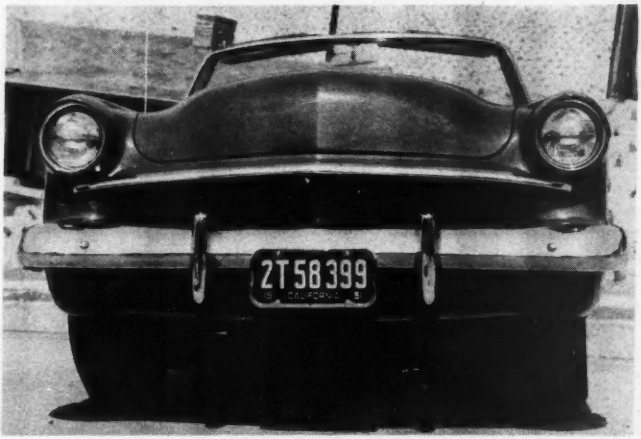


Front bumper was raised 4 inches, making it necessary to extend the lower ends of the bumper guards. Tops were peaked, ground.

Headlights were frenched, using stock Ford rims. Top of each light was peaked with sheet metal. Hood was rounded, frenched.

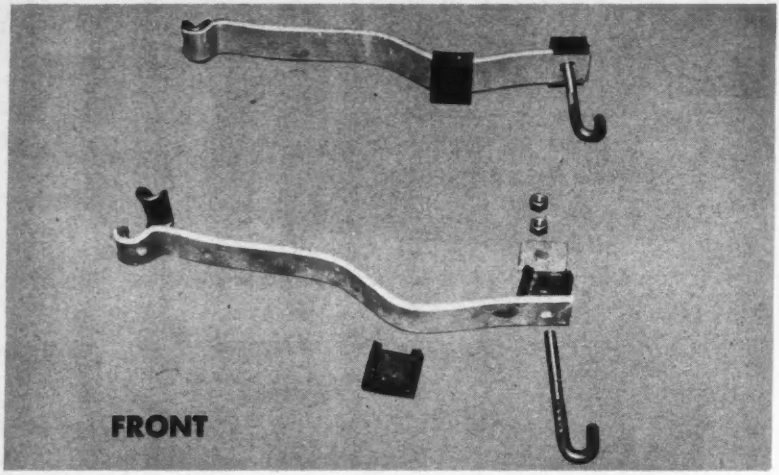


Car was made to look like custom '54. Lowering done using Valley kits.



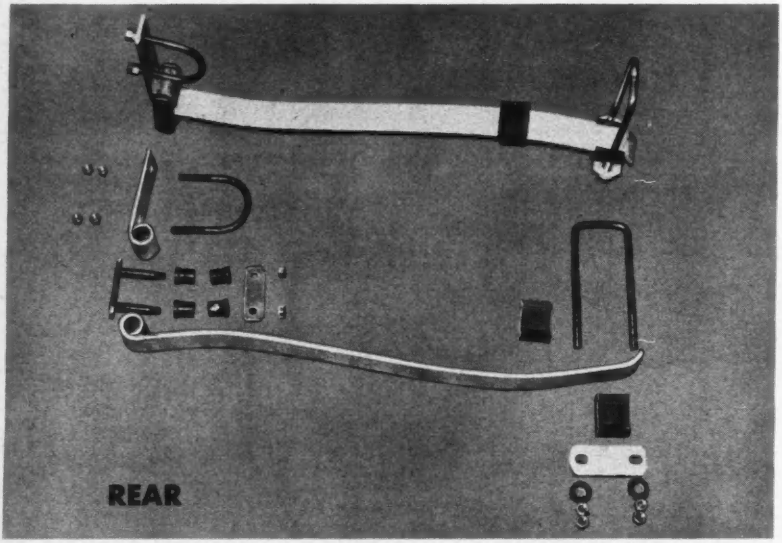
Studebaker scoop was fitted to bottom of grille with parking lights inside.

Deck lid was filled and rounded. Taillights were made from Olds 98 lenses.

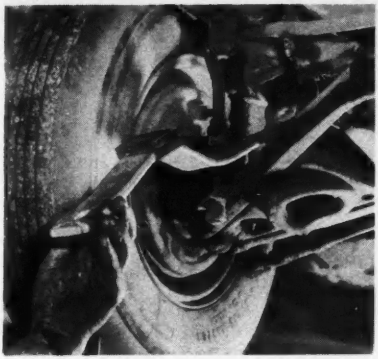


1. Simplicity of the Hellwig front stabilizer is exceptional, consisting of a helper spring for each side and a pair of "J" bolts to clamp the springs to the chassis.

By John Christy



1. Here is the basic assembly for the Olds rear end: leaves, hanger brackets, axle "U" bolts, frame "U" bolts, shackles, bushings, nuts and washers, contained in Hellwig kit.



2. Jack up the front end until the wheels are off the ground. Insert bushing in hooked end of leaf and place cushion on crown. Hook over fourth helix of the front spring.

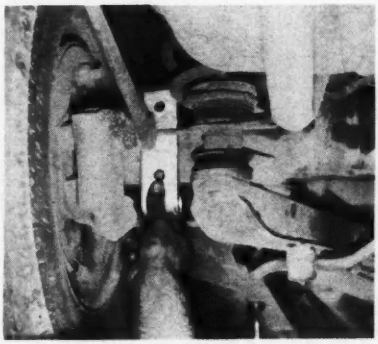
3. Place second rubber cushion on the end of the spring so that the holes line up for the "J" bolt. Hook bolt up on the front bumper bracket and insert bolt in spring.

HOLD THAT HELIX

Coil Springs *Can* Be Made Stable

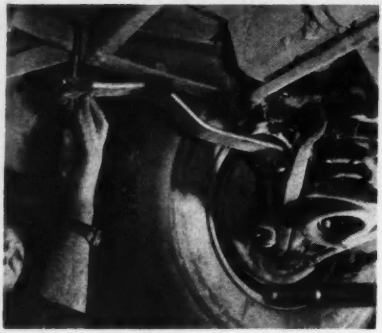
DON'T get us wrong; there's nothing basically wrong with coil-spring suspension. Some of the finest racing cars in the world have used coils and run off from the competition on every course. Actually the coil spring is a torsion bar wound in a helix to conserve space.

(*Continued on next page*)

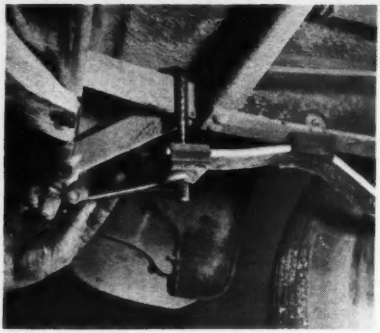


2. Jack up rear wheels until they are clear off the ground. Move brake line away from axle housing and install axle hanger bracket as shown. Place "U" bolt around axle.

3. Install shackles in both leaf and axle hanger as shown here. At this time place all rubber cushions in their proper positions on the leaf and swing up into position.



4. Place the stabilizer leaf in position so that the rubber cushion on the crown of the leaf is pressed against the frame of car. Take up on "J" bolt to bring leaf up snug.



5. With the "J" bolt snugged up to finger tightness, use a wrench and take up three to five turns. Install the lock nut and tighten. Repeat this for the opposite side.

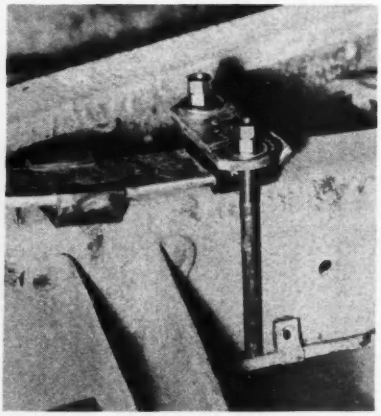
FRONT

(*Continued from preceding page*)

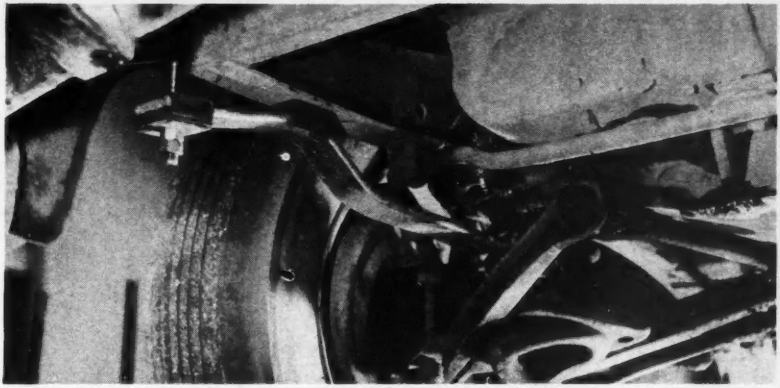
However, as used in much of Detroit's passenger iron, coils leave much to be desired. This is due largely to use of too weak a spring and improper damping in most cases, which, combined with the ridiculous weight distribution in the average passenger car, gives about as much stability as that possessed by an intoxicated camel on an ice floe. However, there are ways to get around

REAR

4. Place the frame "U" bolt over the frame rail forward of the axle as shown here. Put cushioned crossbar into place and onto "U" bolt and then thread take-up nuts on bolt.



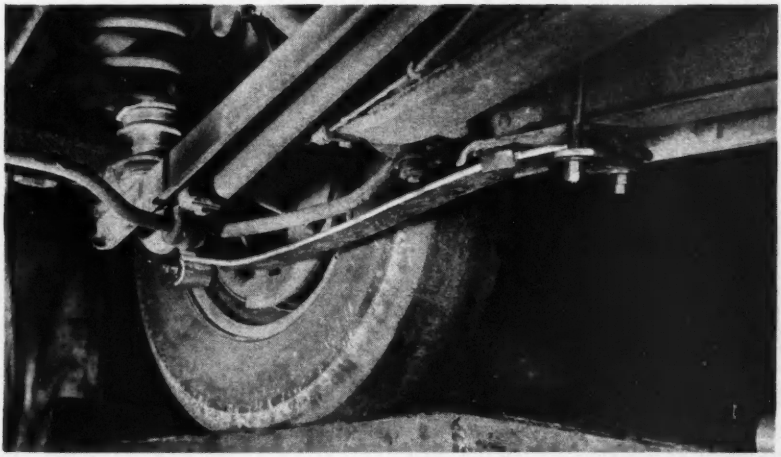
5. Tighten the axle "U" bolt nuts which have previously been left finger tight, then insert lock nuts and secure them tightly. Make sure all rubber cushions are in place.



6. Remove the jack and check for proper clearance between A-frame and stabilizer as well as between leaf and top of coil housing. Each side is individually adjustable.

this situation, both for front and rear end units. Here, on these pages is described one of the best of these. Basically the device is the addition of extra tension, *in just the right amount*, to the ordinarily week coil through use of an adjustable leaf spring acting on the coil or the axle. Manufactured by Hellwig Products Co., the device is available nationally at almost any reputable automotive supply house or jobber.

Since the coils on the rear end of the Olds and Buick ride on top of the axle, high in the frame, the rear stabilizer is best used in such a way that it acts directly on the axle rather than on the spring. The unit is basically the same as that for the front end except that it is fitted with slightly different brackets and the bend of the leaf is somewhat at variance with that of the front stabilizer. Pictures show how they are installed.



6. Take up on the frame "U" bolt nuts and adjust for proper stiffness, then install lock nuts and tighten. Repeat the above procedure on the opposite side of the car.

THE SINGER THAT'S . . . .

Sleek envelope C-Jaguar type Fiberglas body was built for Buchanan by Dick Snider.

WHEN a little, tub-like English car called the Singer first came over to this country around '49 it somewhat justly acquired the reputation of having all the power of the sewing machine of the same name. Other epithets such as "pop corn machine" and "road louse" were also applied by those whose taste ran to more performance.

Those early models *were* underpowered. They handled poorly and rode not at all well. However, along came 1951 and a number of owners of other makes of small foreign machinery got a jolt. The despised Singer had grown a whole chestful of hair in a year. The Singer folks had completely redesigned the engine and the car. Under the hood of the '51 model was a 91 cubic-inch single overhead cam engine with more than a little kinship to such doughty power plants as the early-day Miller, the McDowell A and the new four-barrel Mercedes. Considerably restricted by almost non-existent exhaust ports and a miniature intake layout integral with the head, the little mill still packed enough punch to romp all over MG's and the like. Opened up and given a little of the hot rod treatment several of these started to shellac class competition all over the place.

The chassis, too, was given a going over with independent but stiff front suspension, better shocks, a slightly longer wheelbase and more precise steering. Considering the facts it was only a matter of time until somebody came up with a real full-house job using Singer components, particularly since the cost of the only American 91 incher, the midget Offy, was beyond the means of the average hot rodder wanting to get into this class of competition.

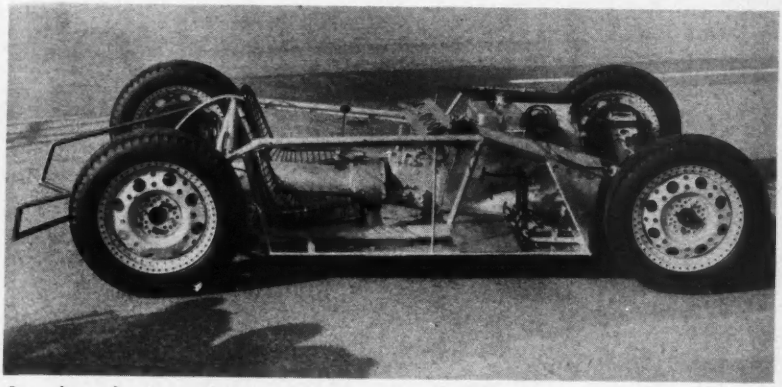
Somebody did. The somebody was Kelly Buchanan and Bob Arnt, students at Southern California University.

Kelly had been the owner of a venerable and huge Stutz DV-32 powered roadster that had been caught in a fire. He had raced this monster several times and despite the car's huge wheelbase had successfully blown off sundry competition.

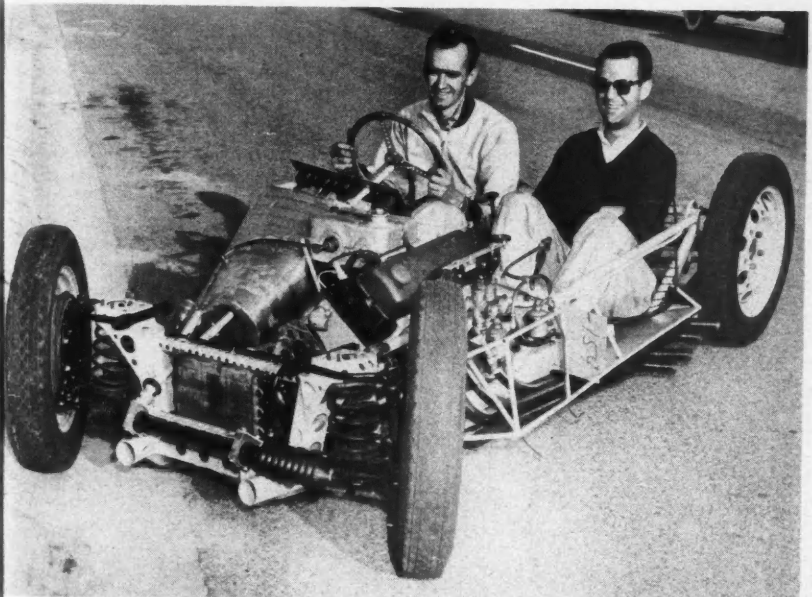
This was a nice sort of habit to get into, so after the fire, Kelly decided to stuff an-

(*Continued on page 66*)

No Sewing Machine

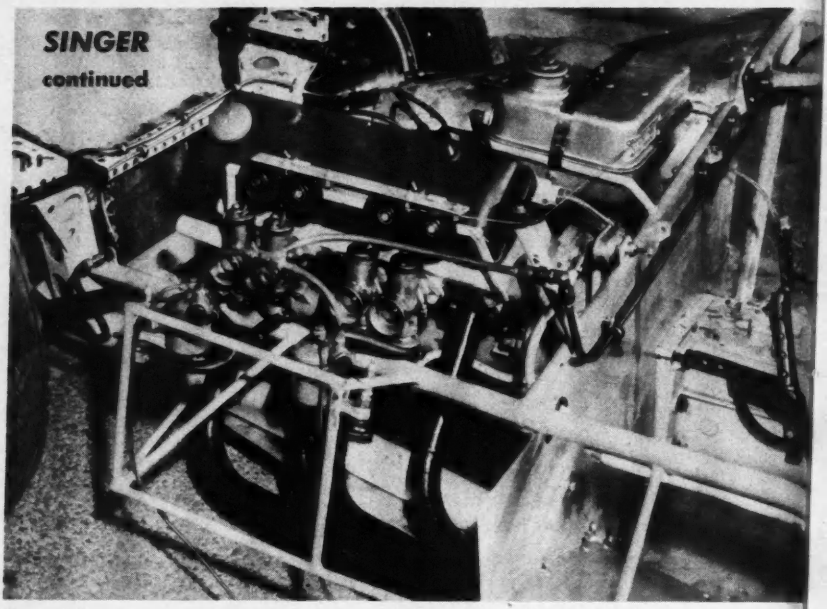


Low slung chassis was built from chrome-moly tubing. Top line is lower than the wheels.

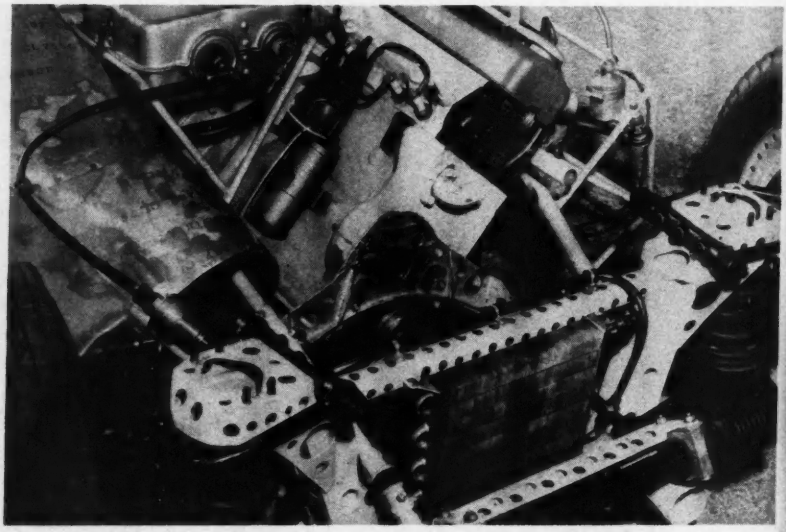


Kelly Buchanan and Bob Arnt sit mighty close to the ground. Road clearance is almost nil.

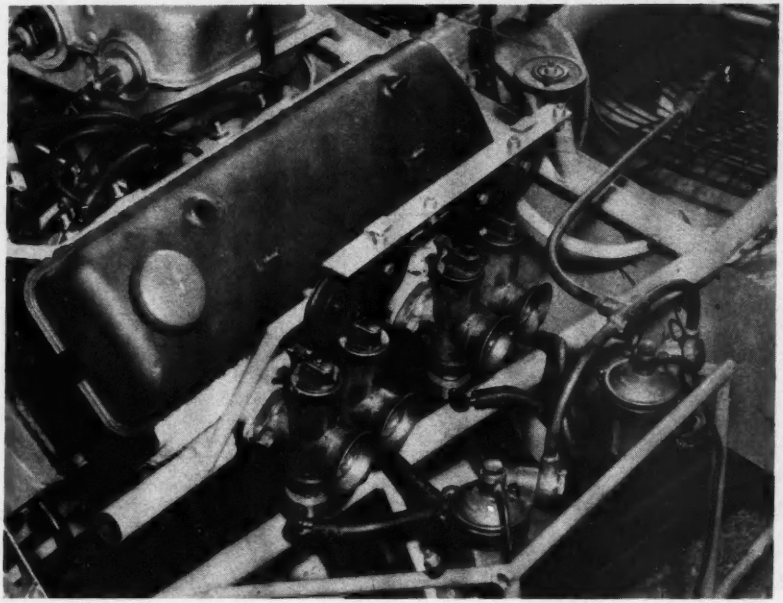
CONTINUED



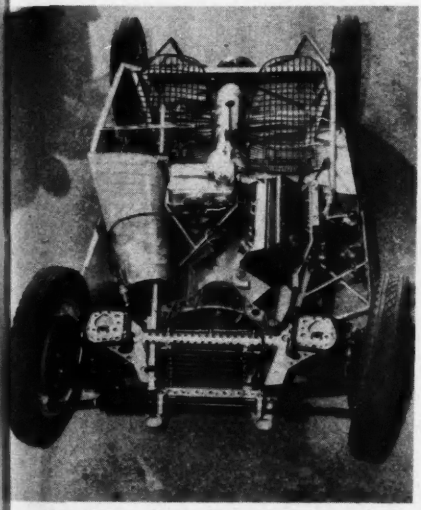
Souped Singer engine has been set in at a 45 degree slant. Tank feeds dry sump system.



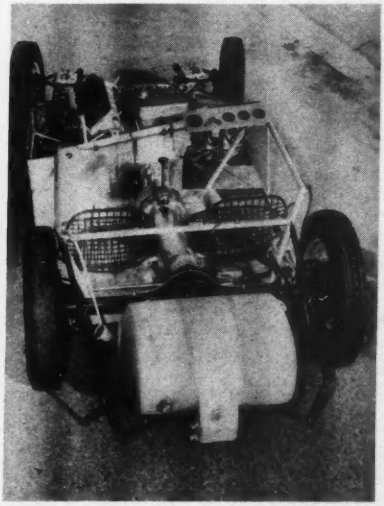
Oil is pumped from engine through refrigerator-coil cooler and filter to oil tank (top).



Four Amal motorcycle carburetors, fed by two S.U. float bowls, are operated by cables.

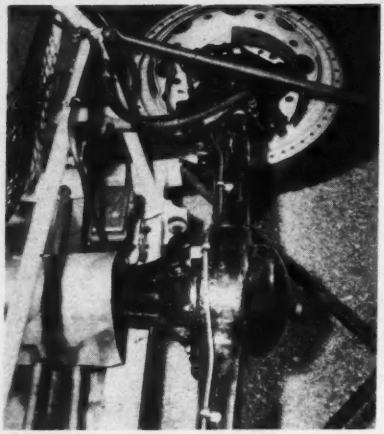


Front view shows angle of engine and ruggedness of the chassis layout in hot Singer.

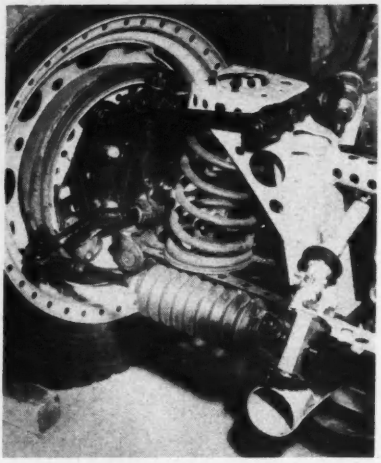


Rear aspect shows the large surplus aircraft fuel tank rigidly suspended on frame tubes.

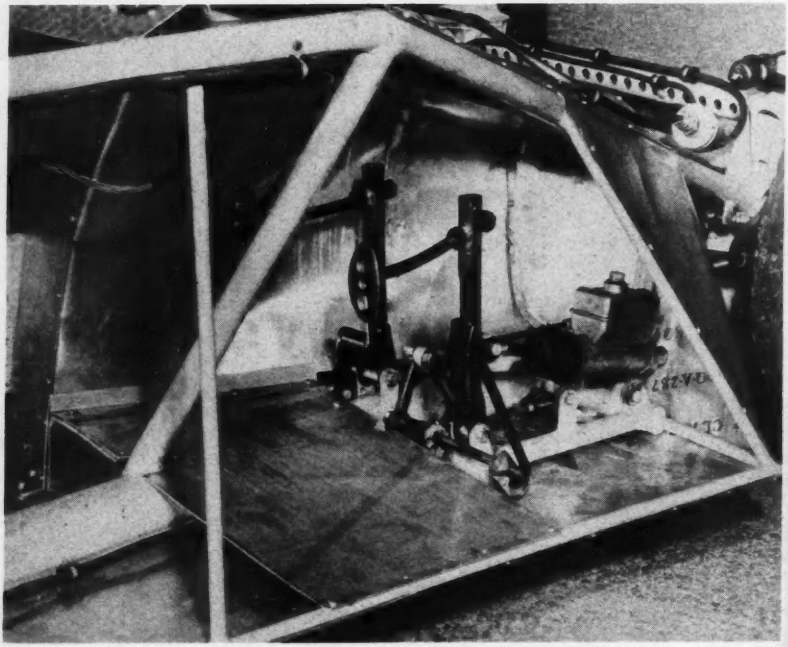
SINGER continued



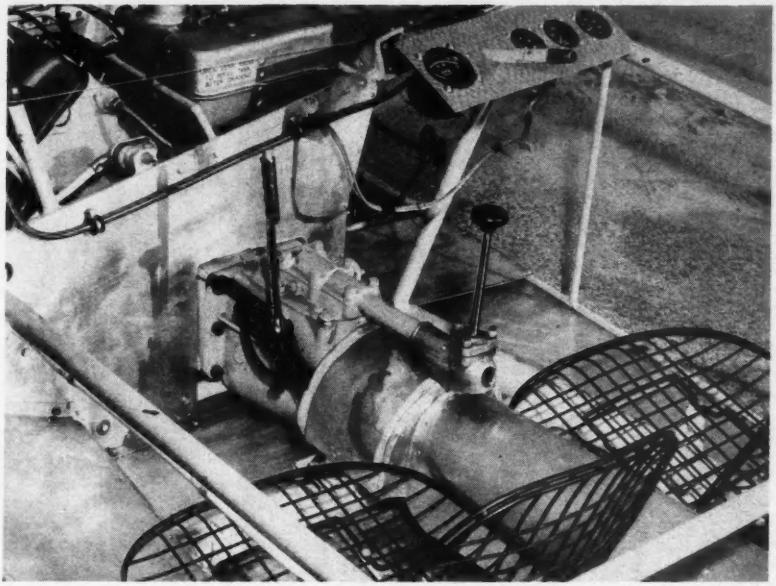
Rear end is suspended by Morris Minor torsion bars, stabilizer with small Panhard rod.



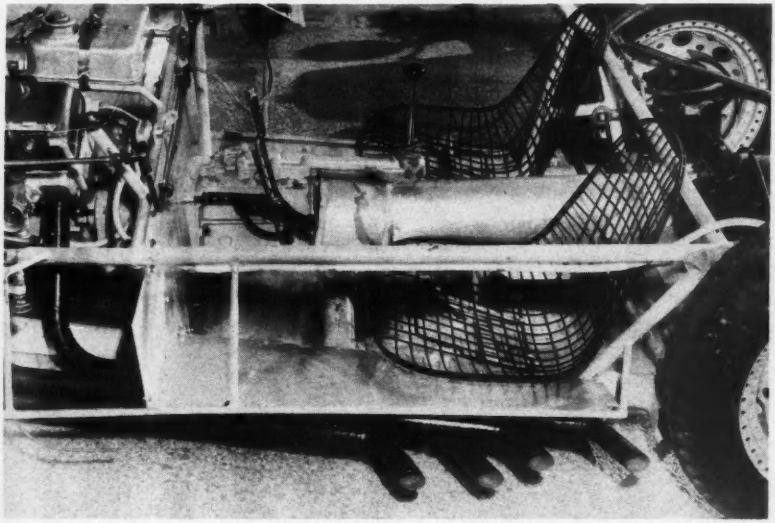
Front suspension is Singer coil spring and wishbone type adapted for Morris steering.



Pedal layout is extremely simple, riding in tunnel next to engine. Note master cylinder.



Transmission is stock Singer unit riding upright. Engine is rotated 45° on bell-housing.



Wire-mesh seats are Eames garden chairs minus legs and bolted solidly to frame rails.

CONTINUED ON PAGE 66

TORCH TIPS

By Dick Day

Photos by George Barris

RESTYLING SIDE TRIM

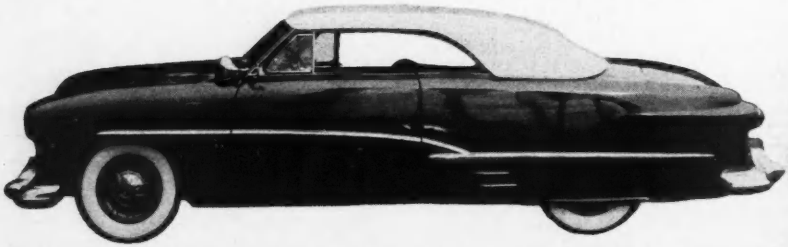
TODAY'S custom no longer has that slab-sided, trimless "lead-sled" look. Side trim has become as important as grille and tail section treatment, a logical carrying through of motif from one end of the car to the other. This is as it should be, the day of the lead-barge being passé.

While a good portion of the side trim as turned out by Detroit *on the Detroit product* is not always in the best taste, this trim may be adapted to other brands of cars either in whole or in part.

This month we combine *Grab Bag* and *Torch Tips* to bring you the latest dope on side trim installation together with an inkling of what is available in chrome. To start things off right, we suggest you latch onto a few brochures from various manufacturers to get illustrations of the trim available. Then take a standard-size photo or brochure illustration of your car and paste it down on a piece of water-color board. Cut the trim out of the other brochures and experiment with placement. This method can, needless to say, save you much trouble later.

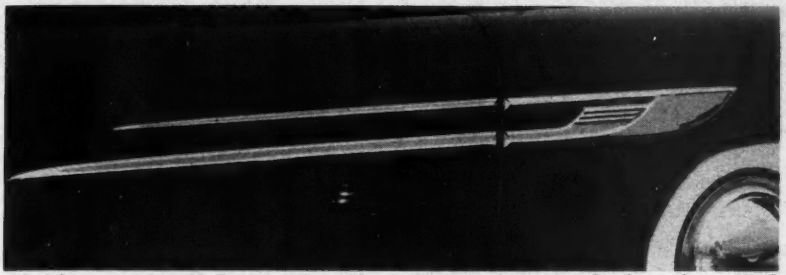
One thing to remember, though, is that chrome for the sake of chrome alone is worse than useless; use it sparingly and in the right places, always keeping in mind the fact that "all that glitters is not necessarily good design."

(Continued on page 52)

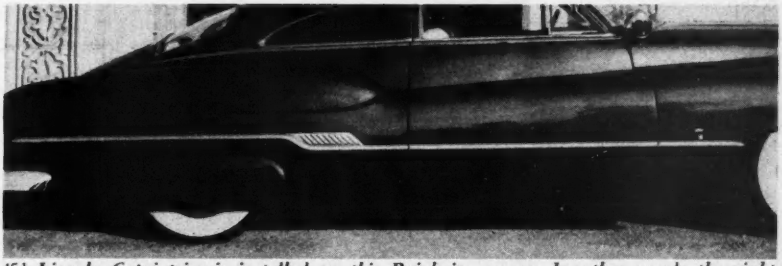


A clever and usable example of just what can be accomplished with side trim is this '50 Ford. Leading curved trim is '52 Buick special, and the rear piece is from a '52 Olds 98.

Side trim from a '53 Pontiac was used to follow contour on this '49 Mercury. It was installed in a reversed position and upside down compared to its original position on the Pontiac.



The short, massive '51 Pontiac trim adds a switch in design to this late Chevy. With this type of trim design the center area could be painted in a matching two-tone.



'51 Lincoln Capri trim is installed on this Buick in reverse. In other words the right side trim of the Capri was used on left side of Buick. Note fender trim relationship.

Leading piece of trim is '53 Dodge reversed and mounted upside down. The blending rear section overlapping the airscoop is from a '53 Ford. Design emphasizes the airscoop.

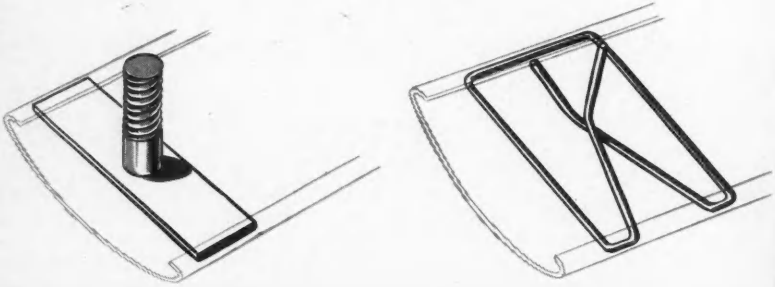
'50 Buick Super Riviera Coupe trim was adapted to this late Olds at a lower position than that of the removed stock trim. It has been butt-jointed to the stock gravel shield.

TORCH TIPS continued

INSTALLING SIDE TRIM

Now that we have covered a few redesigned situations, and made it obvious what can be done with a little thought and imagination with various components, we conclude with part two, the show-how, installing trim.

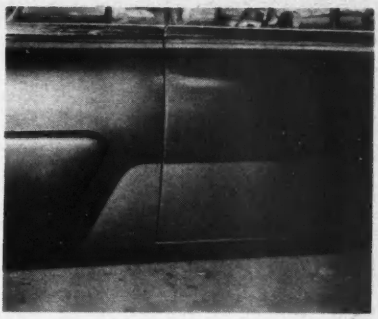
The custom dealt with is a '53 Mercury belonging to Tom Jefferies. It features a very novel method of two-tone paint on the exterior of the car with the side trim acting as the dividing line. In a future series we will present the story of Tom's Mercury in a complete step-by-step form from the time it rolled into the shop until it was driven out in all its glory.



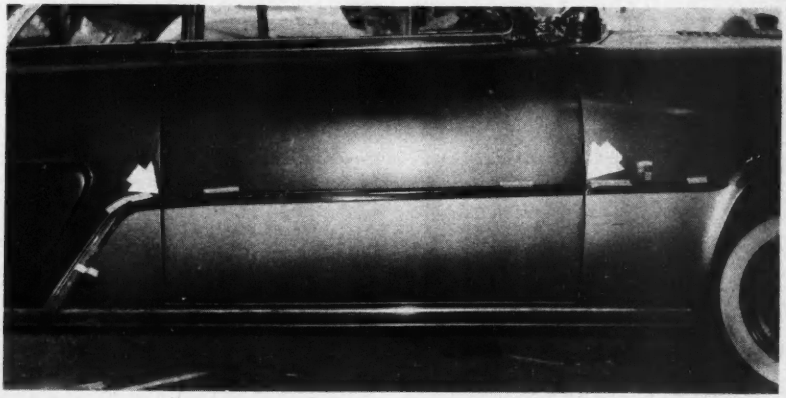
Special type clips or bolts are used to attach trim. T-bolts (left) are used where the back side of paneling is accessible. Spring clips are used for door and quarter panels.

Tom's Merc has '53 Olds trim installed in an upside down, reversed position, blending with the restyled airscoops. The lower panel is golden in color while top is copper rust. First make your selection of trim. Then fit it to side of car with masking tape for position. Then scribe a chalk line to the top and bottom of the trim, for guide lines.

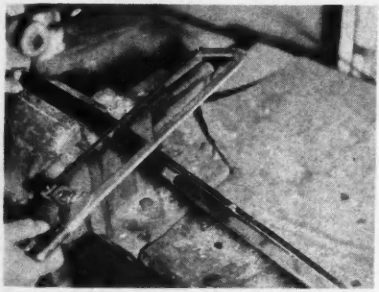
Next step is to mask off area to be painted. The separation line for the two-toning should center the two scribed lines of trim.



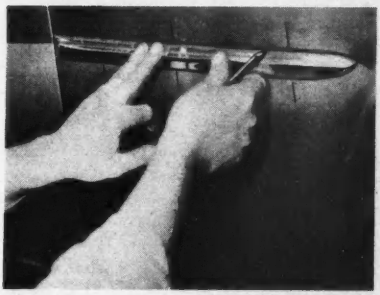
After top and bottom areas have been two-tone painted and the masking tape removed, the job should look something like this.



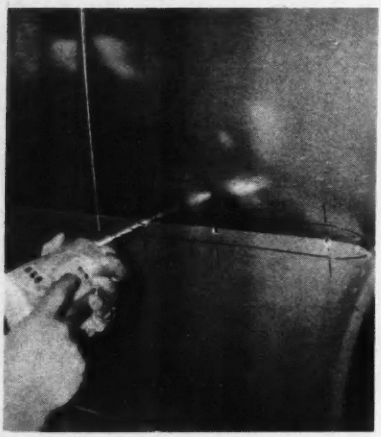
Now retape the side trim as you did in the beginning step, centering it over the painted dividing line. Mark the side trim at the door where it will be cut (arrows).



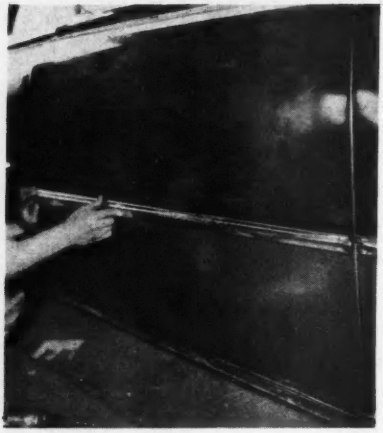
When cutting the trim for the front door opening, cut it at a 45° angle towards the rear. Dress up the end of the trim with a file.



Align front section of trim with horizontal markings and the door crack. At 8-inch intervals, mark off points for the T-bolt holes.



Retrace the vertical lines so that they cross the paint's dividing line. Then at the center of each line drill a 1/4-inch hole for bolts.



Align the door panel's trim as you did the previous piece, and then mark off every 8 inches for the T-bolts or clips as before.

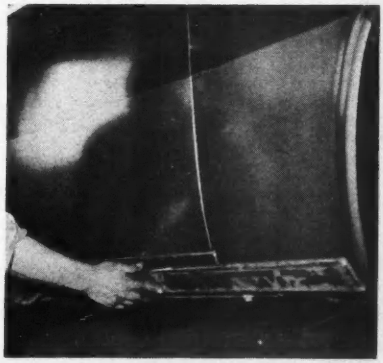
The same process is used for installing all three pieces of trim. Here the door panel's spring clip holes are being drilled out.

When cutting the rear piece of trim which will fit onto the quarter panel, make just a plain vertical cut where trim ends at door.

INSTALLING ROCKER PANEL STRIP

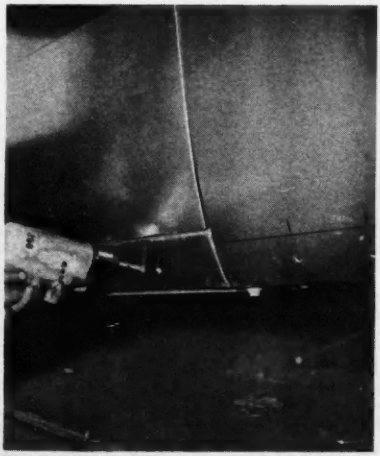
Rocker panel stripping is found on the lower body panel, usually running between each wheel opening. It is designed to protect this area against curb scuffing or any other object that might come in contact with the body at this point. The installation of this component falls into the same category as that of the side trim, for the processes are very similar. If your car lacks this item then here's the way to remedy it:

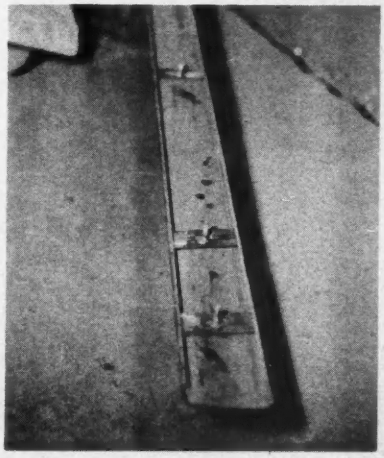
Select the trim so that it will run from one wheel opening to the other. It is advisable that the trim be wide and sturdy.



Scribe, fit and cut it as you did the side trim before. Lay out the T-bolt centers at 8-inch intervals, and then drill out holes.

If possible, use T-bolts to attach this type of trim only because it is likely to take quite a clobbering from time to time.





SHORE BOAT

Some Sailors Have a Girl in Every Port But . . .

PHIL SCHMIDT, under contract to Uncle Sam's Navy hasn't been in every port; however, there's a good chance that he might start hitting a few of 'em. The Navy is that way—just as you get settled as part of Ship's

Company in a shore berth like North Island, where Phil is at the moment, somebody in BuPers (Bureau of Personnel) decides that your services would be much more valued somewhere else. Okinawa or Iceland, for instance. Or a nice DE, carrier or cruiser, maybe.

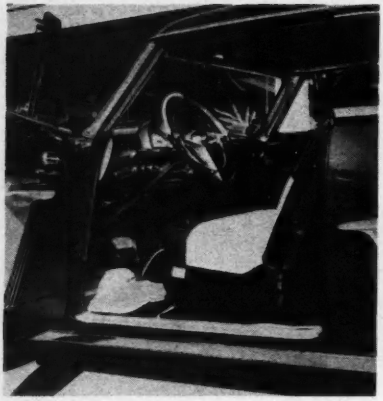
Consequently, the forward-looking swabbie doesn't latch onto much in the way of extraneous personal property when stationed ashore, a car in most cases being the sole big investment. Such is the case with Phil. A hot rod and custom car enthusiast since before he raised his right hand to repeat after that ubiquitous Jaygee, Phil just continued what came naturally. Not wanting to sink his semi-weekly paycheck into a lot of excess baggage and not wanting to save *all* of it either, he went to work on his '52 Merc hardtop with the willing help of the crew of Styler's Custom Shop in San Diego. The changes were all conservative in nature but clever in execution. Throughout the operation, Phil helped in the work during his hours of liberty.

Unique front end restyling was accomplished by removing all chrome trim from grille except the center bar. Then hood airscoop was filled and contoured over nose.

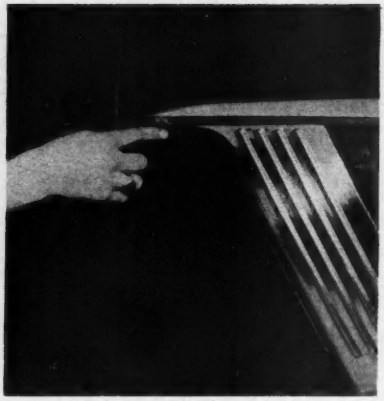
The original airscoop on the grille was moulded into the hood and faired down in front to form a wide center ridge. The original two lights and row of teeth in the grille were removed and replaced with a single center bar. The lower half of the grille is

(*Continued on next page*)

SHORE BOAT continued



The interior was given the full Naugahide treatment, black and white color scheme contrasting the Burgundy Maroon exterior. Doors, windows are push button operated.



Small micro-switch push buttons for doors are well concealed under outside trim. A master switch and lock for entire electrical system is secretly concealed in grille.

actually the bumper and was left in position but painted to match the Carnelian Burgundy exterior of the car.

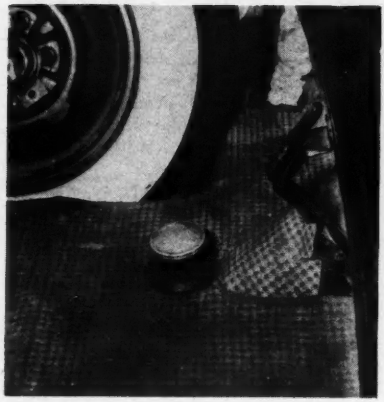
Outside of a mild french job on the headlights, the front fenders have been pretty much left alone. The rear fenders were extended at the top rear by one inch and at the bottom rear to the extent of a half-inch. The stock taillights were kept but were frenched in the process of extending the fenders with body sheet-metal.

Phil built his dual Duff and Roy exhaust system into the tips of the rear bumpers, using small rounded extensions to finish off the job. Not a believer in tail draggers, Phil lowered the car only two and a half inches at both front and rear. The final touch was the removal of all insignia and the small ribbon on the rear fenders.

As we said, Phil has no wish to hit every port; he's happy in the port of San Diego. Who wouldn't be with a liberty boat like his?

Merc has been dropped 2½-in. front and

Photos by Bob Hardee



The gas filler spout has been repositioned to the inside of trunk and the outside opening in the body filled. The deck lid has been shaved and is operated electrically.

Very effective taillight restyling was done by frenching-in the complete rear sections of fenders, yet retaining the stock lens. Exhaust tips were built into ends of bumper.

rear. Hubcaps are from '53 Stude. The rear license plate bracket originated from Chev.

RACING RUBBER

(Continued from page 15)

body rubber are made from different compounds designed to allow each portion of the tire to do its job effectively. The high speed generates tremendous heat which gradually breaks down the bond between the compounds and centrifugal force spins the tread from the casing. This can be substantially reduced by a thinner tread.

Firestone took a big step toward the solution when they introduced their new Bonneville tire. It was based on a proven design developed for jet planes faced with the same problem landing at speeds well over 150 mph. (See HONK! Oct. '53.)

The Bonneville tire, made for straightaway high speed runs has a fabric design built to withstand tremendous internal pressures and a thin tread area with cooling vents on either side to keep the tire cool and the rubber from centrifuging.

Though the construction of the tire will offer many answers to racing problems the tire itself is not the answer. During races almost 70% of tire wear is carried by impact on the left front tire. Most of this occurs on the outer edge and the remaining wear is distributed on similar edges of the other tires. Tires used for road racing must have sufficient tread to cover this one-sided wear. A standard tread width is necessary. The thin Bonneville tread would let the tire keel over on its sidewall rather than the longer wearing tread compound.

Tread designs are important considerations also. In part they can increase the adhesion qualities of the tire if properly designed. Most of the racing tires such as Firestone, Dunlop and Pirelli utilize some version of the diamond design.

This is versatile enough to squeegee water from the track during wet runs and provide top adhesion on dry surfaces in both the forward direction for braking and a sidewise direction for cornering.

Straight tread designs, that is designs which go with the circumference of the tire, are ideal for cornering. The upright surfaces of the tread provide excellent adhesion for side movements but they offer little added adhesion for forward braking.

Tire inflation, while a critical element, is flexible. Normally, factory recommended pressures are best. They provide the ideal tread displacement for the adhesion which was built into the tire. Too little inflation puts more of the tire on the road. While this provides greater adhesion, more tire area brings with it more tire flexing, generates more energy and causes the tire to overheat.

Over-inflation has the opposite effect. It offers less surface to the road. The adhesion is reduced proportionately. But, at the same time less of the tire is in contact with the road and there is less tendency to over-heat. This has been utilized by drivers in races where tire heat was such a problem they were willing to sacrifice tire wear and adhesion for less heat. However, over-inflation brings with it a slippage problem: while the car, for example, rolls along at 70 mph the tire is actually turning at 80 mph. This shortens the life of the tire.

It boils down to this: racing rubber is critical and is not designed for lasting qualities. It should be selected for one race, one car and one track. The sidewalls should be thin to dissipate heat and these skins should not be used for street driving. Because of the flexible walls they are not recommended for recapping.

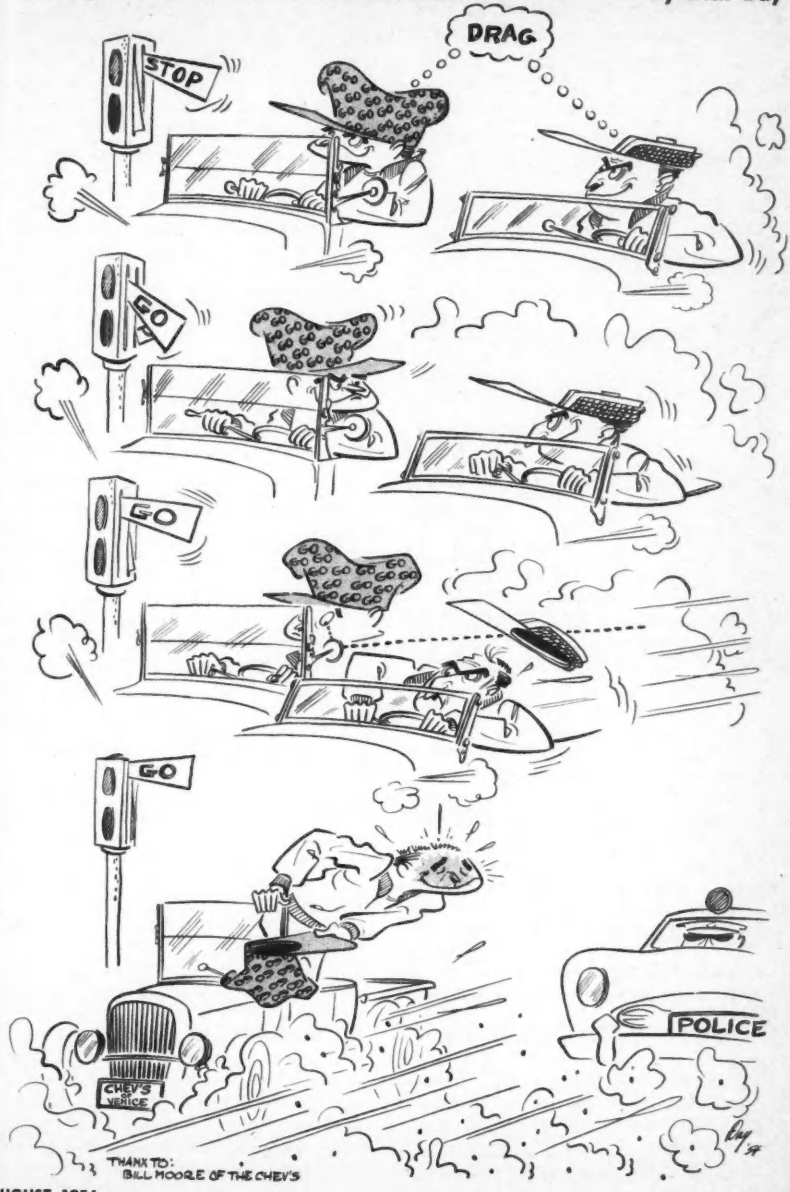
To sum up: Soft rubber, because of its greater flexibility has advantages in racing to the extent that it generates less heat and has greater adhesion.

Hard rubber has advantages as well. What it loses in traction it picks up in wearing qualities. Indianapolis cars all use Firestone synthetics which are made from a compound which is harder (by a few thousandths) than passenger tires, to provide wear for the gruelling 500 miler.

Since heat is villainous, nylon fabrics provide thinner sidewalls. Thick treads should be reserved for the big brutes, the heavy Grand Prix cars with plenty of power, which need the extra adhesion for acceleration and to eliminate the possibility of breaking loose. Even here tread thickness should be kept to the minimum to prevent centrifuging. For most cars it's the thinnest tread and smallest tire size that wins.

HONKER

by Dick Day



SHOPPING AROUND

(*Continued from page 7*)

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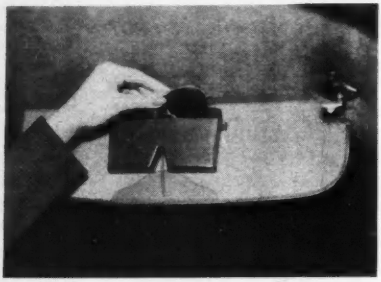
NEW Visor case keeps your sun or eye glasses handy on your visor. The case is plastic with spring closed lid which keeps glasses safe when not in use. The case hooks on to any visor and stays securely in place, out of the way when not in use. It should eliminate dangerous glove compartment fumbling. An attractive gift for any motorist. You get a choice of four automobile colors: dove gray, teal blue, flame red, lime green. Price is: $1.00 postpaid, from The White House, P.O. Box 454, Dept. S, Minneapolis, Minnesota.



CATALOGUE

A NEW mid-year edition of the Almquist speed equipment catalogue is now off the press. The publisher claims the book is a virtual "speed shop" of information. He says the new catalogue lists all the leading brands of speed equipment for all makes of cars. Also included are tuning tips and souping instructions for all popular makes and models. Price is 25 cents and the address is Almquist Engineering Co., Dept. K2, Milford, Pennsylvania.

LETTERS

(*Continued from page 9*)

engine screamed and then came a roar from the pipes until I thought I'd go deaf.

There's no doubt about it! I was in low range. The car and transmission suffered no ill effects. But Never, NEVER Again.

Yours truly,
Larry Hollingsworth
Auburn, Calif.

We-e-e-l-l-l-l, if you don't mind replacing bands, clutches and valves in the gearbox every few miles you can do this. As you say, it takes only one such experience to effect a cure.—Ed.

WOOF WOOF

Dear Sirs:

For a magazine that started off so terrific as HONK! did it sure is a shame that an issue as rotten as the May '54 issue was ever even considered, let alone be published.

In the first place if a reader wants to read about boats, M.G.'s, foreign car races, or customs he surely would not purchase a copy of CAR CRAFT because it has (up to the May issue) always had the reputation of being one of the best, if not the best magazine published for the hot rod sports lover.

How a magazine could go from the top to the bottom in just one month is hard to believe, but outside of "Build a Hot Ignition," and "Garage Gimmicks" the rest of the magazine was strictly for the birds.

We know you will just pass this letter by after reading it and say "you have to try and please everyone as best you can," but it is too bad that the only good magazine left has gone to the dogs.

Sincerely,
Ken Moude, Dick LaBell,
George Perkins, Larry Hall,
Douge Sumner, Fred Clay
Inglewood, Calif.

Bird dogs, maybe?—Ed.

SLICKS

Dear Sirs:

Concerning your article "Head for the Hills" in the June '54 issue of CAR CRAFT; I would like to clarify a few points.

You gave a "word of warning against the use of asphalt-slick type racing tires." I am the owner and driver of the Olds that rolled in the race; I contacted the race official to find out if slicks could be used or not. He said I could. I was also told that the course would be hard asphalt and could be used with asphalt racing-slick type tires. Not being satisfied, I also asked various other men in

the racing field if there would be any advantage in using slicks. All seemed in favor of using them. On the first run I used regular tires and did the course in the time of one minute and half a second. I then asked around the pit crew for their opinion of the course and we decided to use the slicks, since this Olds clocks between 90 and 100 in the quarter mile and is getting over 200 hp at the rear wheels.

We have movies to prove this. The slicks were the cause of the car losing traction, but not the cause of the car flipping over. I did not slide sideways. The car was going on a straight line off the course. There was a car parked directly in my path, close to the course (which shouldn't have been there), and a farm implement which shouldn't have been there either. In order to avoid hitting either one of them I cut my wheels sharp to my right causing the car to flip.

I'm thanking you for reading my side of the story.

I remain, a very learned hill climber.

Neal S. Blum
Arcadia, Calif.

P.S. I'm selling the parts of the car.

Sorry we didn't see the actual moment of the flip, Neal. We were just finishing a run and were on the return road when it happened. We saw you leave the course then paid some attention to our own car. Looking back again, we saw you just coming to rest. The fact remains, however, that slicks cannot be used on a surface that isn't immaculately clean. Sand, marbles, hay or water will cause a slick to take on all the adhesive qualities of a greased brick. In the future, if you feel the need for some kind of racing tire we suggest you invest in a set of Firestone "Langhorne" tires. These were designed for just such a surface—hard, yet marbled slightly. This applies to anybody putting out that much power at the rear wheels on any surface but absolutely smooth and clean asphalt. Your pit crew should have known better.—Ed.

SMALL FRY

Dear Sirs:

Enclosed is a picture of my young son. I consider him the youngest reader of CAR

CRAFT, as he is five months old. He enjoys looking at the different rods and customs with me. I also enjoy your magazine very much each month. I hope to send in some pictures

(*Continued on next page*)

"... well, yes-s-s ... I did want twin pipes"

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Merc	39-54	DeSoto	35-54
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		Willys	52-54

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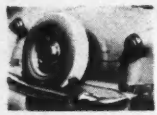

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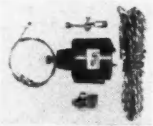

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LETTERS

(Continued from preceding page)

of my '50 Chevy Bel Air in the near future.

I would like to see the picture in print, as I would like it for his scrap book.

Thank you,
Bill Yingst
Audubon 6, New Jersey

THE MOST

Dear Sirs:

Last month I happened to pick up your April '54 issue of CAR CRAFT. Scanning thru this small but fully packed binding of show-how information, I was amazed at its contents. So many terrific ideas explained in step-by-step details . . . with illustrations, yet. To me this magazine is without a doubt, the most, to say the least. Its size is very handy for shop use. Don't ever enlarge it.

I find it more convenient to buy this magazine from the local newsstand rather than receive it thru the mail. However, I missed the May '54 issue and I must have it to complete my converted Lincoln ignition detailed in April, May and June '54 issues. Enclosed is 50¢ to cover cost in handling. Please send May '54 issue of CAR CRAFT to me.

May I add this comment to your so aptly put Editorial comment of Mr. F.X.R.'s letter of April '54 issue page 66.

"Sir: Drop dead."

L. L. Pankey
Torrance, Calif.

TINY BUT TOUGH

(*Continued from page 25*)

lower gear ratios. The clutch is from a small Ford truck and Bob claims that it transmits more power with less slip than the units used in Ford passenger cars.

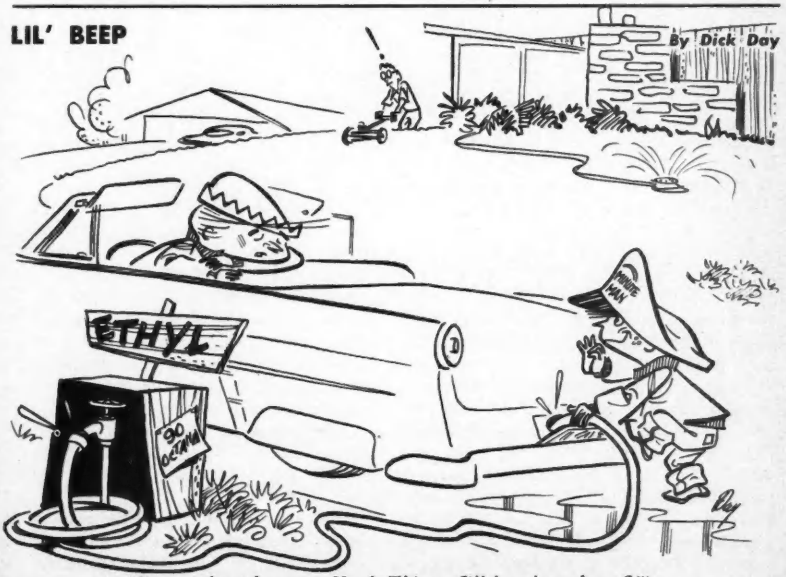
The steering column is from an early Austin 10, its high gear ratio giving one steering wheel turn from lock to lock. This again is important in Trials because it enables a quick recovery from a bad position. A special steering arm had to be fabricated to accommodate the fore and aft drag links of this unit but, in making such outstanding wagons from bits and pieces, one must always be prepared to do a little work and hard thinking to mate components together.

For instance, the car shown has an open drive shaft and this meant adapting the back end of the gear box and fitting Hardy Spicer couplings. This has of course saved a little weight but at about 1100 lbs. the car is just a little heavier than many of similar type.

In its present form the wheel base is 79 inches. The wheel treads are 47 inches front and 45 inches at the rear. The car has a turning circle of 20 feet. Its common features are the outside, fly-off hand brake, fold flat wind screen—muddy type events make this essential while that outside brake is pretty useful on almost perpendicular hills.

The dashboard is almost bare and carries only instruments as required by the law of the country. Below this, and outstanding, is the remote, Allard type control gear lever favored by most of the trials clan, which makes for instant and easier gear changes and prevents many fumbles.

The fore part of the body, hood and engine panels are formed from aluminum but the rear half containing two bucket seats was fabricated from an old Austin sedan. This not only saved a little money and several hours "tin-bashing" but also helped to make the back end a little heavier, thus aiding traction to the drive wheels. Traction is also enhanced by a fairly capacious gasoline tank and the position of the spare wheel. Finally the body, built to conform with the strict measurements laid down by the governing authority of British motor sport is, with the exception of the wheels, finished in a blue paint job.



"Know what 'cha mean, Hank. This stuff'll knock yer hat off!"

. . . NO SEWING MACHINE!

(Continued from page 49)

other car together. Looking around, he came across a wrecked '52 Singer at a very reasonable price. This was to form the basis for a new assault on the competition.

Breaking out the welding set, Kelly and Bob, with considerable help from Pi Kappa Alpha brothers, started putting a truss-type tubular frame together behind the Pi KA house. The main tubes were formed of 2½-inch 4130 chrome-moly, major support tubes were 1⅛-inch tube and minor trusses of ½-inch tube, all .063 wall thickness. To the front end Kelly adapted the suspension from the wrecked Singer together with a Morris Minor rack-and-pinion steering coupled to a U-jointed '40 Buick steering column. Swanson-rebuilt 50-50 Gabriel shocks were also installed.

The rear end was equipped with Morris Minor torsion bars (a very inexpensive way to solve the torsion bar problem). The bars were set laterally, across the chassis, instead of longitudinally as in the Morris. The rear axle is also from the wrecked Singer. Kelly also made up a torque reactor, similar to that on the C-type Jaguar, to keep the right rear wheel on the ground. The whole rig is kept in place by a Panhard rod anti-sway bar, also from a Morris front end.

For brakes, Kelly used the Singer units but equipped them with '37 Dodge shoes and linings. The backing plates were not merely drilled but were cut away entirely for the utmost in brake ventilation. Also used from the Singer were the disc wheels which were so liberally lightened that they made Ernie McAfee's efforts on his Mexico Siata (CAR CRAFT, March, 1954, *Holey Terror*) look like the work of an anemic corn borer. Total wheelbase is 84 inches as opposed to the stock length of 91 inches.

Then came the engine. First the whole works, crank, rods, pistons and flywheel were taken to Vic Edelbrock and balanced both dynamically and statically. The head was milled .050 of an inch and then given a full port treatment including 30 degree intake valves and 44 degree exhausts. To accommodate four 1⅜₃₂-inch Amal carburetors, scavenged from the burnt Stutz, instead of the usual single carb, Kelly bored four 1½-inch I.D. holes in the head adjacent to the intake ports and through the internal log manifold. To these he fitted four flanged tubes to hold the Amals. No balance tube was used.

For valve springs, Triumph motorcycle springs were used in place of the stock Singer units. To finger the valves a Harman-Collins #6327 track grind cam is used. This cam has a .335-inch lift with intake opening 19° before top center and closing 63° after bottom dead center. The exhaust valves are just the opposite, opening at 63° BBDC and closing 19° ATDC. Both cam lobes and rockers are hard faced. For more compression than the head-milling allowed (.070 is maximum recommended for the Singer) Kelly also milled the surface of the block .075 of an inch. A standard Singer Lucas ignition with a heavy duty coil is used.

To achieve a low hood line, the engine was rotated approximately 45 degrees on the bell-housing in a similar manner to that of the Kurtis 500 B series cars and the Mercedes 300 SL. This necessitated the use of a dry sump oil system. For a scavenger pump to draw oil out of the slanted sump, a Chrysler pump is externally mounted. This unit forces the oil through a cooler made from a refrigerator coil and an aircraft filter to the main reservoir made out of a two-gallon deicer tank. From there the Singer pump pulls the oil to the engine.

The interior of the car is as stark as it can be made. Due to the cant of the engine there is no leg room for the hypothetical passenger that sports competition cars are supposed to be able to carry. Pedals for the driver are housed in a tunnel alongside the engine. The transmission is stock and the gear lever sits at the driver's left elbow between the two bucket seats that were made from Eames garden chairs.

Total cost of the car, including the Fiberglas miniature C-type Jag body, is $900 although over 1500 spare hours have been spent on the bear.

With a weight of under 1200 pounds, the car has almost phenomenal acceleration for a power plant of that size. Definitely, this Singer is no sewing machine.

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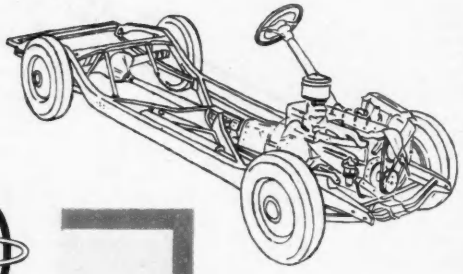

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